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ABSTRACT

Projects are in-depth studies of a topic undertaken by a class, a group, or an individual child. Projects are intended to strengthen children's dispositions to be interested, absorbed, and involved in in-depth observation, investigation, and representation of worthwhile phenomena in their own environments. This Catalog on the Project Approach, the fourth of its kind, focuses on the ways that project work can help children move toward literacy. Section 1 of the catalog compiles six articles connecting project work with literacy, detailing strategies for incorporating literacy in project work at the preschool, kindergarten, and primary grade levels, and for supporting literacy development among second-language learners. Articles in Section 2 focus on implementation issues of project work, including meeting IEPs (Individual Educational Plans) using the Project Approach. Section 3 presents articles describing and illustrating projects done by children in early childhood and elementary classrooms on topics such as butterflies, stringed instruments, clothing, the community, memorials and sculptures, trucks, and the greenhouse. Each summary describes beginning the project, developing the project, and concluding the project; comments from the teacher implementing the project are included. (HTH)

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# The Project Approach Catalog 4: Literacy and Project Work

by the
Project Approach Study Group

Edited by Judy Harris Helm

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Judy H Helm

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Prepared for An Evening of Sharing at the
Midwest Association for the Education of Young Children
April 11, 2003

Early Childhood and Parenting (ECAP) Collaborative
University of Illinois at Urbana-Champaign

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# The Project Approach Catalog 4: Literacy and Project Work


**by the**
**Project Approach Study Group**

**Edited by Judy Harris Helm**



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# Foreword: Literacy and Project Work

Judy Harris Helm, Editor

## Introduction

The focus of this project catalog, the fourth in a series of project catalogs, is on the ways that project work can help children move toward literacy. Helping children learn to read is one of the most important tasks that early childhood teachers (pre-kindergarten through third grade) face in our country. Today, unlike in the past or in other societies, we want and expect all of our children to learn to read well. Citizens in many communities have justifiable concerns about literacy. Learning to read has become a struggle for some of our children. Many citizens, like many teachers and administrators, have concerns about reading failure and how it leads to alienation from school and, eventually, dropping out of school. The development of reading skills in the early childhood years (pre-kindergarten through third grade) is important:

> Academic success, as defined by high school graduation, can be predicted with reasonable accuracy by knowing someone's reading skill at the end of grade 3.... A person who is not at least a modestly skilled reader by the end of third grade is quite unlikely to graduate from high school. (Snow, Burns, & Griffin, 1998, p. 21)

Large numbers of school-age children, including children from all social classes, have significant difficulties in learning to read. Failure to learn to read adequately for continued school success is much more likely among poor children, among nonwhite children, and among non-native speakers of English (Snow, Burns, & Griffin, 1998). According to the *National Report Card 2000*, although the national average scale score has remained relatively stable for reading achievement, significant changes have occurred at the lower end of the performance distribution (Donahue, Finnegan, Lutkus, Allen, & Campbell, 2000). Scores at the 10th percentile in 2000 were significantly lower than in 1992. Thirty-seven percent of fourth-graders failed to score at even the basic level (able to understand the overall meaning of what they read, to make relatively obvious connections between the text and their own experiences, and to extend the ideas in the text by making simple inferences). The National Assessment Governing Board has set a goal that all students be able to perform at the proficient level of reading, or beyond the basic level.

The question, then, is "What is the most effective way to move children toward literacy?" A variety of achievements are needed for successful reading. According to the National Research Council (Snow, Burns, & Griffin, 1998), when children begin to learn to read, they need reading instruction that focuses on using reading to obtain meaning from print, awareness of sounds and groups of letters, and an understanding of the writing system, particularly letters and sequences in words. They also need frequent opportunities to read and write. Then to make adequate progress in reading and writing, children need to develop a working understanding of how sounds are represented alphabetically and many opportunities to use reading for meaning so that they can monitor their understanding and repair misunderstandings. The challenge to the teacher is to move young children toward the literacy goal by being sure that each and every child receives these experiences and instruction, yet do it in such a way that interest and motivation to master the skill are preserved. Being able to break the code, to get meaning from print, is probably not enough.

> An expanded definition of literacy goes beyond skills to include people's willingness to use literacy, the connections between reading and writing, the dynamic process of constructing meaning (including the role of cultural schemata), and the importance of printed text. Social context is a particularly important concept for teachers to consider, both in terms of understanding literacy and understanding how typical school literacy lessons might need to be adjusted to be more beneficial for students of diverse backgrounds. (Au, 1993, p. 33)

Another part of the challenge of literacy instruction comes from the integral relationship between reading and culture. There is clearly a cultural component to the process of learning to read. According to Jerome Bruner (1996), learning and thinking are always situated in a cultural setting and always dependent upon the utilization of cultural resources. It is important to teach literacy in such a way that it affirms the cultural identities of students of diverse backgrounds.

## The Project Approach

As can be seen in the projects in this catalog, growth in literacy skills does occur in project work. The real contribution of project work to literacy may be in the motivation of children to read and write and the understanding that they develop of the tremendous value of reading and writing skills. When children are involved in an in-depth investigation of a topic of extreme interest to them, they want to record their thoughts; to learn the words; and to read the signs, brochures, and other literacy artifacts associated with the topic. This motivation is especially evident when the project topic is relevant to the culture of the child. An in-depth study of something in the child's neighborhood or immediate environment (such as the local grocery store) is most likely to be culturally relevant to not only the child but also the child's family.

The introduction of projects into the early childhood classroom by no means replaces shared reading and writing experiences in the pre-kindergarten years and more formal instruction in the primary years. However, project work provides a context for application and practice of literacy skills in addition to a powerful motivation to master literacy during these important early years.

Projects do not make up the entire early childhood curriculum. Projects are only one kind of learning experience that children need. Teachers who use the Project Approach often also teach single concepts (individually and in groups), and they utilize units, themes, and directed inquiry. Teachers doing projects also provide direct instruction regarding academic skills such as how to count or write a letter. Teachers and children assemble books, photographs, and other materials related to the project. Experiences are planned and documented with writing. Children make webs of what they know and want to know. Children think of questions, which they write down so they can remember to ask experts and field site hosts. Answers are written and displayed. Books are made of project experiences, and thank-you notes are written. Project information and artifacts bring to life the learning centers in the classroom. Themes, units, learning centers, and direct instruction all have important places in the early childhood curriculum and in literacy instruction. However, we believe that there are unique experiences that occur when children ask their own questions, conduct their own investigations, and make decisions about their activities. Projects provide contexts in which children's curiosity can be expressed purposefully, and which enable them to experience the joy of self-motivated learning.

## Project Catalog Contents

In Section 1: Literacy and Project Work, six articles connect project work with literacy. Well-developed projects engage children's minds and emotions and become adventures that teachers and children embark upon together. Lilian Katz in her article "The Dispositions to Write and Read" presents the importance of engagement of children's minds and emotions on long-term literacy goals. In the three articles that follow, teachers Sallee Beneke, Mary Ann Gottlieb, and Dot Schuler share how they maximize literacy experiences at each age level—pre-kindergarten through primary grades. In her article, Rebecca Wilson shows how project work can be especially

meaningful for second-language learners. The last article in this section, "Look! See How They Are Learning" (Judy Helm), provides ideas for documentation and sharing of children's literacy work.

In Section 2, articles focus on implementation issues of project work. Tom Myler shares his experience doing a first project and the challenges he faced. An article on leading discussions and questioning strategies provides ideas for teachers to advance their skill in facilitating project work (Nancy Hertzog and Marjorie Klein). Stacie DeVries shares how children's IEP goals were achieved in project work in "Meeting Individual Educational Plans Using the Project Approach."

In Section 3, teachers share their project work through project summaries. The project summaries were prepared to accompany project displays at An Evening of Sharing, Midwest Association for the Education of Young Children Conference, April 11, 2003, in Peoria, Illinois. These projects represent project work in diverse settings: private preschools, lab schools, early childhood programs for children at risk, child care centers, elementary schools, Head Start, and church preschools. Children involved in these projects come from diverse cultural and ethnic backgrounds: African American, Hispanic, Latino, Chinese, Asian American, and European American. Several of these classrooms have children from many nations. The classrooms where this project work occurred were located in inner cities, in rural small towns, and on college campuses. The economic levels of the children and families in these programs vary from children and families facing the challenges of living in poverty to children and families who are very affluent. The educational backgrounds of parents range from no high school education to graduate-level education and professions such as surgeons, lawyers, and professors.

## Conclusion

As with all project catalogs, it is hoped that this catalog will both support and inspire teachers to do project work with children. In addition, the authors in this fourth edition hope to empower and inspire teachers to maximize the literacy opportunities that occur naturally in project work so that children might experience the value of literacy in their lives.

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*Section 1*

# Literacy and Project Work

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# The Dispositions to Write and Read

Lilian G. Katz

## Introduction

The goal of becoming literate is acknowledged and accepted by all in the United States and around the world. Yet the strategies by which to achieve this goal and the age at which it should be reached are both matters of constant dispute. As disagreements continue about the best age to begin the process of becoming literate and about the right methods to employ, some important issues are overlooked. In particular, issues of motivation and dispositions frequently get lost in the fray. Good project work addresses both of these issues, as can be seen in the summaries of projects included in this catalog.

## Motivation and Engagement

There are many ways to approach the topic of motivation (Greeno, Collins, & Resnick, 1996). Much recent research has adopted the term *engagement*, which refers to "active, goal-directed, flexible, constructive, persistent, focused interactions with the social and physical environments" (Furrer & Skinner, 2003, p. 149). The concept of engagement becomes clearer by contrasting it with what Furrer and Skinner refer to as patterns of disaffection in which individuals are "alienated, apathetic, rebellious, frightened, or burned out" (p. 149). Projects in which children investigate topics of interest or concern to them typically engender high levels of engagement, as is clear in the projects described in the pages that follow.

The use of early preliteracy skills, particularly in the form of writing or dictating to others with the intention to have messages written, are clear in the Stringed Instrument Project, when the child dictated the sign "It's about guitars, cellos, and bass," and in the McDonald's Project, when children painted a sign for the McDonald's restaurant. In these as well as each of the other projects, children take an active role as they use writing with a purpose that is quite clear to them.

It is interesting to note parents' awareness of the children's engagement and motivation. The parents of the children in Harkema and Lanenga's project on snakes noted "their children's excitement, depth of focus, increased love of learning, [and] eagerness to do research"—indications of high levels of engagement.

## Skills and the Disposition to Apply Them

Writing and reading both consist of a wide variety of skills. However, the overall goal of literacy is not limited simply to the acquisition of skills alone: it includes the acquisition of the disposition to be a writer and reader. There are at least two reasons to emphasize the distinctions between the acquisition of skills and the dispositions to use them. The first is that both writing and reading improve with use—not only in the form of exercises, practice, and drills—but in the purposeful application of these skills. These purposes are evident to the children themselves. The more the skills are used, the more proficient the children become, and the more likely they are to acquire strong dispositions to become writers and readers.

The second reason why the distinction between having skills and having the disposition to use them is important is because it reminds us of the risk of introducing the skills in ways that could damage the dispositions to use them. Not all children are ready at the same age to learn to write and read. Judgment about individual children's readiness to acquire these complex literacy skills in ways that will not endanger their dispositions to use them, but on the contrary will support them, are part of the complexity of teaching young children.

As can be seen in the description of the projects reported here, project work provides opportunities for individual children to take on different kinds of responsibilities in the work undertaken: those ready to write can do so; they can help others not quite at the same place in skillfulness. The children can also use books to find ideas and information related to their projects. The 4-year-olds in the Egg Project used many books to deepen their understanding of birds and eggs. Books also enabled the 5- and 6-year-olds in the Bird Project to discover that the bird that flew over them on their outings was a hawk and not an eagle. Even the 2-year-olds "used factual books" as part of their investigation of butterflies—a nice early beginning of the disposition to be readers! The emphasis here is on their "use" of books rather than on instruction or drill in discrete bits of information about sounds and letters.

## An Active versus Passive Role of the Children

Finally, another contribution of good project work is that it is the part of the early childhood curriculum in which children take an *active* rather than *passive-receptive* role in the learning experiences provided for them. The importance of the active role is one reason why it seems best to begin children's literacy development by encouraging them to write before worrying about teaching them to read.

The 4-year-olds in the Salt Truck Project made lists of those invited to see their work, and they wrote the invitations. The 5-year-olds in the Greenhouse Project dictated the material to be included in their book about the life cycle of plants. The 5- and 6-year-olds who developed the Fashions, Beauty, and Barber Shop were "inspired to write about the shop in their journals." The second-graders who studied their community represented their new knowledge in a wide variety of ways. In a study of worms, a mixed-age group applied their dispositions to measure, count, as well as write about worms. In another school setting, 4-year-olds studied where their clothes came from and as part of the project filled out clothing orders for the newly established department store in their classroom.

These activities are all examples of the active roles young children are motivated to take in the course of good projects. In these ways, children can strengthen their developing dispositions to be writers and readers for the rest of their lives.

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# Strategies to Incorporate Literacy in Project Work in the Pre-Kindergarten Classroom

Sallee Beneke

## Introduction

Children are developing concepts about reading and writing long before they begin to produce conventional print or begin to read in the conventional sense. In fact, "reading and writing acquisition is conceptualized better as a developmental continuum than as an all-or-nothing phenomenon" (NAEYC, 1998). It is also important to recognize that literacy includes other skills in addition to reading and writing. Consequently, in many states, such as Illinois, listening, speaking, and conducting research are considered integral aspects of literacy and are included in standards for early childhood education (Illinois State Board of Education, 2002). In combination, these skills support children in learning and communicating their ideas.

This communication of ideas and concepts is an integral part of project work and provides a wonderful context for pre-kindergarten children to develop their literacy skills. In addition, not only does project work provide many, many opportunities for children to apply the literacy skills they already have, it also motivates children to acquire new skills so that they can undertake research and communicate about the topic more deeply. The resulting growth can be seen in their use of print for communication, as well as in their listening, research, and connection with books. As are many skills in real life, literacy skills are often applied simultaneously in an integrated, rather than isolated, way. For these reasons, literacy skills are best taught and acquired in a context in which they are useful and meaningful to the child, such as that created by the Project Approach. Teachers can capitalize on this context by making use of several strategies that support children in using skills in an integrated way.

## Practical Strategy 1: Use Webs to Record Children's Concepts, Knowledge, and Theories

Webbing is a process that can be used throughout the project. This process can begin in Phase 1 when the teacher records the children's prior knowledge of the topic. New knowledge and concepts can be added in Phase 2. A web that summarizes all that has been learned is often displayed as part of Phase 3.

Webs can support the development of pre-kindergarten children's reading skills in several ways. Children offer ideas to be recorded on the web. As the teacher records their ideas on the web, children are able to see that print stands for these ideas; they see print as a meaningful, useful tool. The use of webs is especially meaningful to children if the teacher creates an expectation that the web is a working document. As a project develops, she can return to the web periodically and review what has been included by pointing to each word as she reads it out loud. Through her comments, she can help children connect the print with prior discussions. For example, on February 25, a new incubator was delivered to our classroom, and as it became apparent that the children were interested in discussing this addition, I began a web of their ideas about eggs. The following day, we revisited the web. Several children who were not there on the preceding day were interested in knowing what had already been written and who had suggested each item. I read and pointed to each word on the web and noted who had contributed each idea.

The words dictated on the first day were mainly simple pieces of information, such as types of animals that lay eggs. However, on the 26th, as children added to the web, hypotheses and theories began to emerge. For example, on the 25th, it was suggested that eggs can be different colors. On the 26th, Sara said, "Birds lay eggs that are pink, blue, yellow, and purple." When asked why the eggs are different colors, Sara said, "It depends on the color of the bird." Sentences and phrases such as these can be recorded on a web, and as the children learn more about the topic through their project investigation, these phrases can be revisited and expanded or revised.

Recording the information in a web format is more useful than a list when the information is to be expanded on and revised on an ongoing basis. Children take pride in the words that they have suggested to be added to the web, and they like to "read" them. It is easier for the child to locate his own dictated words when he can remember the position of his words in relation to the rest of the web. Writing the child's name next to his contributions also helps the child to locate his words. Children can combine their understanding of letter/sound combinations with the clues described above and use the information to "read" the words. Children in our class are often able to read their words and also the words contributed by many of their friends. Because the web is usually created as a result of group discussion, several children are generally involved in the ongoing discussion and use of the web. The web becomes a shared history of their discovery and is therefore more meaningful to them. Children can model for and assist each other in locating and reading the words on the web. It is also easier to expand on concepts and ideas when text is arranged in a web rather than a list. Items on the web are more likely to have adjacent white space available for elaboration of ideas, while this flexibility is limited in a list. The web can be reduced and copied so that children can take it home and discuss their ideas with their families. If children take a web home periodically, parents can note and reinforce the use of additional vocabulary words and new ideas that have surfaced as the project has developed.

## Practical Strategy 2: Take Dictation

Taking children's dictation allows the teacher to model the process of recording ideas with symbols. Opportunities to take dictation occur frequently and are very useful in all three phases of project work. For example, in Phase 1, children can dictate stories about their prior experience with the topic. In Phase 2, they can dictate plans for investigation, or they can dictate what happened as they did their fieldwork or interviewed guest experts. Throughout the project, the children can be encouraged to dictate narrative to display with documentation of their work.

In Phase 3, they can take the long view and dictate the overall story of their investigation and what they have learned. Project work especially lends itself to the creation of child-dictated and illustrated books. For example, they can tell about what happened first, what happened next, and so forth. They can explain what they learned, and they can tell about their future plans. Children who have conducted an in-depth investigation can also write books from the standpoint of experts on the subject of their investigation. For example, in the Greenhouse Project, the children wrote a book about what helps flowers to grow and what will kill them. Children can illustrate these books with their drawings, or they may choose photographs from a class collection.

## Practical Strategy 3: Provide Ongoing Opportunities to Journal about the Project

Offering individual journaling as a routine classroom activity helps children make a regular, personal connection with the practice of writing. This practice can be helpful even at the pre-kindergarten level, when most children's writing skills are only beginning to emerge. Making the project topic a part of the journaling process can help motivate children to participate in journaling by providing them with something to write "about." Likewise, encouraging children to journal about project-related items can help teachers to "read" out loud what the child has written in her journal. We provide this connection to project

work by incorporating project-related items into a daily script that is offered as a possibility for journaling. We also provide concrete, project-related objects that can be drawn by children who are at earlier stages in the development of their writing skills and who record information with pictures rather than print. Often, children do both.

Younger children are often encouraged to participate in journaling by watching the older children journal. For example, on one of her first days at our center, 3-year-old Adia chose to join 4-year-old Nicole at the writing table. That day, the children were folding and cutting snowflakes, and several pre-cut snowflakes were displayed on the writing table. The script for journaling at the writing table was "Today we have snowflakes." Four-year-old Nicole chose to copy the script and draw the snowflake (Figure 1a). Three-year-old Adia's entry (Figure 1b) included a drawing of the snowflakes, attempts at drawing the letters in her name, as well as other drawings and letter-like shapes. Offering children routine opportunities for journaling communicates the expectation that the child is a "writer" and encourages children to move toward using writing to communicate. As the teacher supervises the writing table, she can help children make the connection between letter combinations and their sounds by sounding out the portion of the words that children have written so far. Children love to have adults read what they have written.

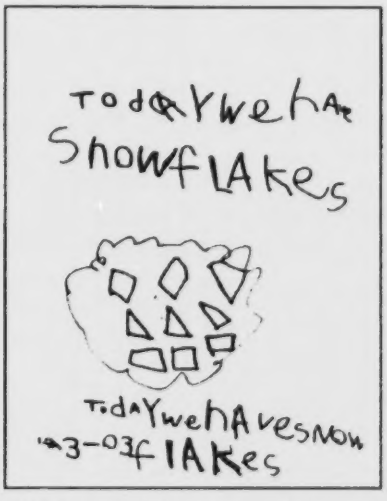


*Figure 1a. Nicole copied the script and drew a snowflake.*

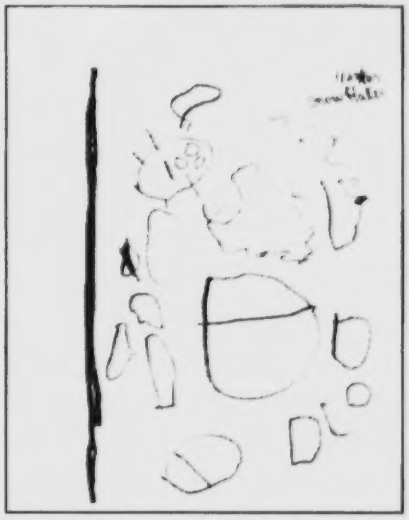

*Figure 1b. Adia drew a snowflake and tried to write the letters in her name.*

## Practical Strategy 4: Record Project Words on a Word Wall

As we discover new vocabulary words in the course of a project, we write each word on an unlined index card and post it on the wall alongside the writing table. This wall acts as a lexicon for the children as they visit the writing table during choice time. Many of the cards on the word wall are written by the teacher, but children can also volunteer to print the word on the card. The teacher can add a drawing or other picture of the item alongside the text on the card. This strategy helps children to determine which card is likely to contain the word they want to use. As with journaling, the teacher can help the child to figure out how to sound words out by modeling the "sounding out" process.

## Practical Strategy 5: Emphasize Print in Real-Life Context

Children who are engaged in project work often have to use real artifacts and materials in the course of their investigations. Teachers can assist children to see the usefulness of print by reading and referring to environmental print that will provide useful information to children in their project work. For example, during the Greenhouse



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Project at our center, the children looked through photographs taken during the construction of a neighboring greenhouse. The children were especially interested in the heavy equipment used in the construction. Several of the children chose to draw these machines, and they typically included the letters and words that were printed on the machines. As the children encountered these words, the teacher would read them to help the children understand the meaning of the photograph. The teacher can take advantage of these opportunities to help children recognize letter/sound relationships in a meaningful context.

## Practical Strategy 6: Encourage Child-Created Signs and Labels

As children uncover new knowledge in Phase 2 of project work, they often create constructions, pictures, or other representations or models of their work. They are usually eager to display their accomplishments and take pleasure in helping viewers to understand their work. Rather than labeling these creations herself, the teacher can encourage children to write or type their own labels. Many such representations and constructions were created in the Greenhouse Project. The children created their own greenhouse, complete with plants, pots, flowers, and tools. They labeled these constructions so that visitors to the classroom would be sure to understand their meaning (see Figure 2).

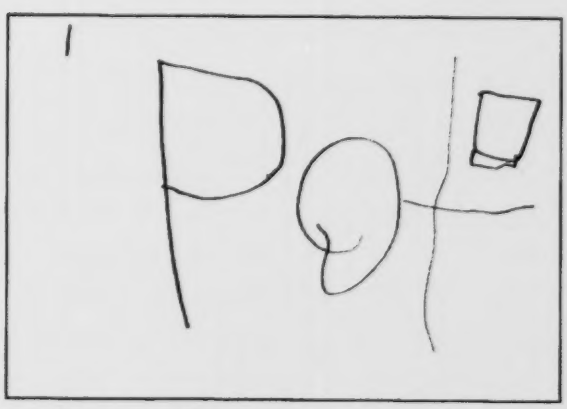

*Figure 2. A child labeled a greenhouse "pot."*

## Practical Strategy 7: Chart and Graph Results

Teaching the children to record their observations on charts and graphs is another way to help children learn to use and interpret print. In Phase 2 of project work, children often make hypotheses and predictions, and then they test them. Children who are beginning to enjoy copying words often enjoy recording the results of these investigations. For example, during the Car Project, children predicted which parts of a car would attract a magnet. Their predictions were recorded in one column, and the results were transferred from the small version of the graph that the children took with them as they experimented. Four-year-old Lisa asked if she could record the results. She copied the words "yes" or "no" onto the large poster-size classroom version of the graph so that all the children could see the results (see Figure 3).

*Figure 3. Lisa copied the words "yes" or "no" on a graph.*

## Practical Strategy 8: Encourage Use of Symbolism across the Curriculum

When they read, write, and speak, children use systems of symbols to communicate. As children engage in dramatic play in the housekeeping or block areas, they can act out events in their lives and take on the roles of others. In essence, through their dramatic play, they are symbolizing what they know. Likewise, as children draw and paint, they are often creating representations of real objects or events. The objects, events, and people involved in the three phases of project work often provide a



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rich collection of experiences and information that children can draw on and interpret in symbolic play and representation. This process can help them digest or organize what they already know. It can take place in almost any area of the classroom and across the domains of development.

## Practical Strategy 9: Use a Variety of Research Materials

Many types of printed materials can be used for research and reference in projects. Reference materials that are geared toward young children can be very useful, but printed matter developed for adults can also be useful. In fact, children are often more motivated to use "real" adult materials than they are to use those developed for children. These materials can include flyers and brochures, manuals, magazines, instruction pamphlets, and books. For example, as the children helped to unpack the incubator to hatch duck eggs, they looked at the diagram and instructions for assembly. The teacher helped them to find words on the instructions that matched the print on the incubator itself, such as the model number and the temperature settings. As children look at materials such as these, the teacher can apprentice them in learning about the various ways in which reading material is organized. For example, they can learn about columns, chapters, tables of content, and glossaries. This type of practical application of reference materials helps children to see the usefulness of reading and motivates them to apply reading in solving problems and answering questions through research.

## Practical Strategy 10: Read for Humor and Enjoyment

As Lilian Katz has said, project work helps children develop their "horizontal knowledge" about the topic. Rather than knowing a little bit about a lot of things, they become experts and know a lot about the project topic. This knowledge helps them to recognize the humor in stories, nursery rhymes, and other writing involving fantasy. Children also enjoy reading about something that is familiar to them. As experts on the project topic, they can enjoy and recognize stories that revolve around realistic characters and plots, and they recognize jokes that have their basis in reality. For example, in a project on eggs, the children might have experience with a rotten egg and would recognize the meaning of the saying, "Last one there is a rotten egg."

## Practical Strategy 11: Discussion

Discussion is an important feature of project work. Children and teachers often discuss the next steps in a project during a large group meeting and then agree on teams that will carry out the work that is necessary to carry the project forward. As children discuss their hypotheses, possible experiments and resulting findings, ideas for group constructions, and work plans, they learn to take turns in conversation, consider the content of others' ideas, and respond in a constructive way. For example, during a project on cars, three girls discussed the colors of markers they would need to bring along to mark their survey (Beneke, 1998, p. 48).

> *Mary* (picking up a green marker): I can do this, too.
>
> *Marissa* (to Mary): Mary, no! They're supposed to be all different colors! We already have a green one.
>
> *Emma*: A green one. That's light green.
>
> *Mary* (Mary picks up a pen): But you don't have black.
>
> *Marissa*: That's a ... Hey, sorry ... That is a pen. (pause) A pen does not count.

The teacher can extend discussion about the project to the home by sending home Project Updates or by including a description of the project in a current center newsletter. At the IVCC Early Childhood Education Center, we frequently feature the current project as our headline story.

## Practical Strategy 12: Learn to Form Hypotheses and Questions

Projects offer children many opportunities to form hypotheses and questions. For instance, in Phase 1, the teacher often creates a web or list of what children currently know about the topic. In the Egg

Project, one of the children noted that eggs can be blue, purple, and green. She hypothesized that the color of the egg "depends on the color of the bird" that laid it. As the project moved into Phase 2, the children began to dictate questions for further investigation. Among the questions they asked were, "How long does a duck live?"; "Will the ducks bite our fingers?"; and "Do all ducks quack?" Teachers can help children begin to form questions by modeling questioning, by recognizing the children's attempts, and by rephrasing them in a question format. For example, in the Egg Project, I started the children off by asking the children, "What part of the bird do you think will grow first inside the egg?" Children are often curious about an aspect of the topic, but they don't know how to phrase their words in a question format. In this case, I often take their statement, rephrase it as a question, and then check with them to see if I have given their question voice. For example, as we listed our questions about eggs and ducks, 3-year-old Eric said, "How does a duck swim on the ice, because he might slip?" I said, "Are you wondering if ducks can walk or swim on the ice when the water is frozen?" Eric eagerly nodded his agreement. Sometimes, it takes several attempts at rephrasing before we reach agreement about the question, and in the process, the children build their ability to form questions.

## Conclusion

The three phases of project work provide many opportunities for children to apply literacy skills in ways that are meaningful to them and that motivate them to learn more. This approach is effective because the reading, writing, speaking, listening, and research are *about* something that takes place in a context that is meaningful to the child. This meaningful context not only encourages children to apply skills and helps them to believe that someday they will be readers and writers, it creates a context in which they *are* readers and writers at their own level. With the support of teachers and parents, these literacy skills can be developed and refined so that children can develop these literacy skills as life-long, useful tools.

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# Strategies to Incorporate Literacy into Kindergarten Project Work

Mary Ann Gottlieb

## Introduction

When reflecting on my years of facilitating projects with kindergartners, I keep coming back to the importance of literacy and how it permeates almost all the projects that I have facilitated with children. When I was asked to write a chapter for *The Power of Projects* on my experiences moving children toward literacy through project work, I identified 14 practical strategies that foster literacy development and are found within project work (Helm & Beneke, 2003):

1. Emphasize building vocabulary as a foundation for further learning.
2. Encourage children to play around with letter and word recognition.
3. Provide opportunities for publishing and reading child-made books.
4. Provide events that encourage writing.
5. Help children develop email relationships.
6. Help children create pamphlets and brochures.
7. Encourage children to use and create references.
8. Plan for language-rich play.
9. Encourage peer coaching.
10. Help children learn how to ask questions.
11. Tap the potential of culminating experiences.
12. Provide opportunities to listen to experts.
13. Provide opportunities to listen to peers.
14. Read topic-related informational books to children.

Let me address each of these strategies as you might find them in a classroom where child-initiated learning can be found.

## Emphasize Building Vocabulary as a Foundation for Further Learning

We are all aware of the need for building vocabulary, especially for those children who come to us with limited experiences. As young children show interest in a possible project, I read many books about the subject. By doing so, I begin to build vocabulary about the topic for the possible project. At times, I have used a word wall to display these words so that the children can see them and use them in daily writing or play. I think a more meaningful way to display those new words is to place them in an area reserved for project words. If a photograph illustrating each word is placed above the word, I believe that the visual image helps to reinforce the concept, as well as to help the child quickly identify the word that he may be seeking.

When we begin a new project, we take the time to web our current knowledge about the topic. The first web may be thin, with few contributions and perhaps some inaccuracies. However, this web represents the children's knowledge at the time. Sometimes, a child knows what he wants to say but simply does not have the words to do so. Visiting a field site early in the project may help to provide some of the basic words connected with that project.

Webbing at the end of the project allows the children to commit to paper new concepts and vocabulary. This web will be more detailed and probably will contain numerous new words. I find myself smiling when I think back to one farm project when we compared the beginning and ending webs. The boys and girls seemed genuinely

surprised—and then proud—of what they had learned throughout the project as evidenced by what was placed on the final web.

Don't forget the artifacts that you may be collecting as the project gets under way. Putting a label next to each tool, construction, or representation helps reinforce the idea that an illustration or construction has a written symbol, which may be a new vocabulary word.

Field site visits early in a project may be the means of connecting words to objects or artifacts that the children are familiar with but just cannot articulate. Field site visits answer questions the children have voiced concerning the project. Children may have inaccurate concepts about a topic that are clarified during the field site visit. These inaccuracies may become apparent through the questions they pose as they prepare to make the field site visit. By allowing the children to discover the answers at the field site, the teacher is actually allowing the children to take charge of their learning.

Photographs from the field experience can reinforce new words. Encouraging the children to describe what they see in the photo as you write down their words helps them make the connection from speaking to writing to reading. I have put together these word books and sent them home so that parents can understand more about the project and, one hopes, incorporate some of those words in daily conversation with their children. Figure 1 is a page from the word book from the Farm Project. These word books become a valuable resource as the children continue to work on projects. For example, pictures taken at Kroger's became the valued reference we used when constructing the hallway flower shop as part of the Grocery Store Project.

## Encourage Children to Play Around with Letter and Word Recognition

Word games using project words allow the teacher to meet district goals while doing project work. In our kindergarten classroom, we made rhyming words using farm animals: cow how bow; horse force course; and pig wig big. We also used animal words when learning about descriptors: pink pig; red rat; and blue bunny. For alphabet recognition, we listed all the farm words we could recall in alphabetical order. Sometimes, we had more than one word for a specific letter; sometimes, we had no word for a letter. We even illustrated alphabet books using project words such as those from the Grocery Store Project or the Tracks in the Winter Project. Nursery rhymes and songs relating to a specific project are another resource for phonological awareness. Figure 2 is an illustrated page from the song "Miss Molly Had a Dolly." During the Health Center Project, we learned the song, "Miss Molly Had a Dolly," and the rhyme, "Doctor, Doctor, I Am Ill." You might want to put songs or rhymes from all your projects into a book so that the children can take turns taking the book home. This strategy would encourage parents to read the books, modeling the reading process for their children.

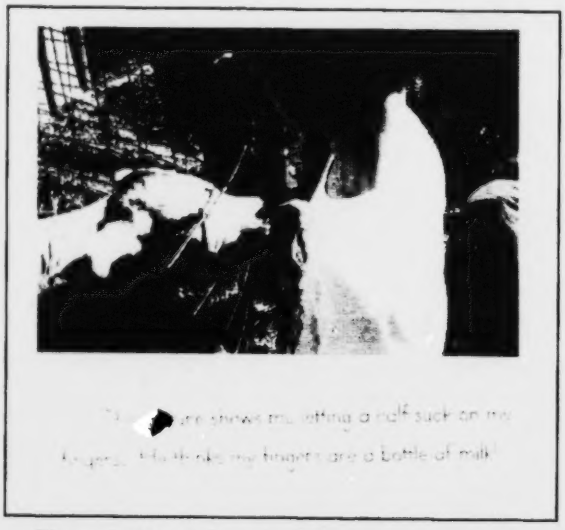

*Figure 1. A page from the Farm Project word book.*

## Provide Opportunities for Publishing and Reading Child-Made Books

Books about a project become classroom references. Some can represent the combined effort of all students, such as the *Grocery Store ABC Book*, or the *Farm Project Photo Book*. These books are comparable to pictionaries for students who are not yet reading. Figure 3 is one page of a


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book containing hospital words. I used pictures from a hospital handout to make a dictionary of hospital words. Another meaningful book might contain a time line of photos showing the development of the project from "messing around" to the culminating activity.

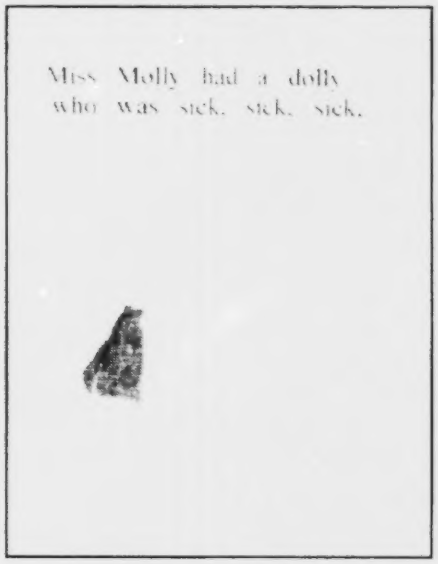


*Figure 2. A page from "Miss Molly Had a Dolly."*

*Figure 3. A page from a book with hospital words.*

During our small group time, we often made books relating to the project. We made *Jack and Jill* during the Water Project or *Pat a Cake, Pat a Cake* during the Bakery Project. Math counting books such as 1,2,3, a snowflake counting book, or a book containing pictures of pairs of mittens for counting by two's were made during the Tracks in the Winter Project.

## Provide Events That Encourage Writing

Writing events permeate most projects if you recognize and capitalize upon them. Some of these events will be conducted by the teacher, who will be modeling the writing process. Some will be conducted by the students and will be valued by all if, from day one, you accept each kindergartner's level of writing as natural and valuable.

Kindergartners can add to project webs if they use the sounds they hear and know. You can add a small picture to each addition to help clarify it. Questions that the children want to investigate should be written and displayed prominently. These questions will be referred to frequently and answers added as they become apparent. Further investigation may pose more questions, which can then be investigated.

Children can write in pairs or small groups with the more fluent writer modeling for his peer. For example, children in one classroom wrote to another classroom about the construction of the Hinton Health Center. Every child can contribute something to the writing—an idea, a sound, or the period at the end of the sentence. Sometimes, I write with a child, putting in sounds that he does not know. We have written to other classrooms seeking information or guidance. All of the children who contributed to the letter will sign it.

Many small books are made in the classroom during small group time for a variety of purposes. As we made illustrations of the farm animals, the children used resource books to spell the names correctly. In Figure 4, a child is using the farm book as a resource. We made another small book using words that rhymed with cat. Once the children saw the correct spelling of the first word, most of them were able to make additional words.

More mature children helped their friends who had not yet mastered the concept of rhyming words.

*Figure 4. A child uses the farm book as a resource.*

During the Hospital Project, I made a dictionary of hospital words, using simple pictures from a coloring book. The children kept this book in the writing area so that they could refer to it when writing during center time.

## Help Children Develop Email Relationships

Many children come to kindergarten already having computer experience. Some have computers in their bedrooms. Computers are a part of their world, and as teachers, we need to help everyone become computer literate. The Internet is a source of information for any project, and the teacher can share that information with the class. However, I think a more appropriate use of the computer during project work is to help the kindergartners develop email relationships with experts or with other students. We corresponded with a farm wife when we had further questions about the field site visit. We also corresponded with children in another classroom in a different city. Both classes were working on a farm project. Pam Scranton's class had hatched eggs, and we wrote asking about their experience.

Now that many schools are online in every classroom, corresponding with children in other classrooms is much easier. In fact, today it is possible for a kindergarten class to summarize each day's project activities and email them to parents at the end of the day.

## Help Children Create Pamphlets and Brochures

Kindergartners seem to enjoy writing for a specific purpose—for example, making pamphlets explaining how the health center operated as part of the Hinton Health Center Project. We had to first decide what to write. Then it was important that all words were spelled conventionally because the pamphlet would be "published" and distributed to all classrooms. We also created a brochure to announce the opening of the health center. The words in the brochure, too, had to be spelled conventionally. The children learned about first drafts, the need to limit what was said because the paper was only so big, and how to fold and distribute the finished product. Just think of the possibilities: directions for mailing packages (Mail Project), how to care for a pet (Fish Project), recipe for brownies (Bakery Project), ways to save water (Water Project)...

## Encourage Children to Create and Use References

I have already mentioned several references my children created during project work. The photo album and the farm animal book were references during the Farm Project. A word wall, an illustrated word wall, or a word wall set on a time line allow all children to see the project words all the time.

Using a pictionary for conventional spelling, especially when writing a letter, is a skill that kindergartners can begin to learn. I worked with my children to help them learn to think about each letter's position in the alphabet—beginning, middle, or end. When we wanted to spell zebra during the Zoo Project, we knew to look at the end of the alphabet for the word.

If you are fortunate enough to have access to a video camera to take on a field experience with you, consider asking a parent, grandparent, aide, or other adult to film the experience. Dr. Judy Helm has trained senior citizens to film by focusing on

the event, not the children. She helped one grandfather film a horse, zooming in on the eyes, nose, and mouth. Wouldn't that footage aid our kindergartners as they try to re-create the horse by sketching, modeling, or painting?

## Plan for Language-Rich Play

As my kindergartners became involved in the Water Project, they created a Laundromat in our family living area. The children used words directly from the project in their play: water, laundry soap, fabric softener, bleach, washer, washing machine, dryer, change, and vending machine. We built mailboxes during the Mail Project, and used a real cash register to make change for stamps. Five classrooms created a hospital in the hallway where a few children from each room played every day. Teacher associates took turns supervising the play. The Bakery Project culminated when we set up a bakery, where the children "played" being employees of the bakery and sold bakery goods to other classes. Project work enriched the vocabularies of the children who then used the new words in their play.

## Encourage Peer Coaching

In my multi-age classroom, peer coaching was taking place all the time. You can have it happen during project work with any group of children. The kindergartners helped their younger or less mature peers. I remember when Andrew was coached about how to paint the bat cave. He was a good painter and wanted to help. He was able to take direction and worked tirelessly painting the gray outside of the bat cave. In another project, the Water Project, one of the boys directed his project group in the construction of the plumbing in the cardboard house we were making. He tore off the tape and assisted in the taping, but verbally directed another friend who was actually laying the "pipe."

## Help Children Learn How to Ask Questions

Kindergartners think they know how to ask questions, but often what they are really doing is making statements. Asking questions is a skill that needs to be taught. Five-year-olds are capable of learning that questions often begin with one of these words: who, what, where, when, why, can, do, could, or should. I do not hesitate to rephrase a child's comment, turning it into a question. For example, if we were talking about what we wanted to find out when we went to the hospital to visit, and a child said, "You gots to take your own clothes." I might say, "Are you asking if the hospital has any pajamas for you to wear when you are sick?" We could ask, "Do you have pajamas for kids to wear when they come to the hospital?" Or perhaps I might say, "You want to ask, Are there clothes _____?" and wait for the child to finish the question. This strategy allows him to complete the thought and take it along on the field experience. Putting the question (with illustrations if appropriate) on an index card that the child can carry with him gives him a visual reminder of his question.

Do not forget to write those questions in front of the children. Your modeling is so important. You can later cut the questions into strips and allow the children to respond to them. The questions can then go home where, one hopes, parents will also ask about them.

## Tap the Potential of Culminating Experiences

Every project needs a culminating experience. Children need to bring closure to the project as well as to have an opportunity to share their learning with others. You can conclude a project by inviting others to observe it. Let your children practice talking about different parts of the project. We tried this strategy with the Zoo Project, which we relocated in the hallway. We invited other classes to come and listen to the project members tell about the zoo construction. Figure 5 shows children sharing the construction of the zoo with the students in a pre-kindergarten classroom.

Another way to share a project is to invite parents and other adults to view the project. We held an open house when we worked with Judy Cagle's 3- and 4-year-olds to make the Hinton Health Center in the center court of our school. Our Open House

coincided with an important meeting being held in the building. Many of the attendees stopped to visit the Health Center. Some of those we invited assumed roles of ill students. We were able to show the community what we had learned, practice using new vocabulary, and talk to an unfamiliar audience.

On two occasions, we constructed a hospital and a grocery store in the hallway. In both cases, the culminating experience was the actual play with older and younger children. After corresponding with children from two other districts, we invited them to join us for a morning of shared farm experiences. This culminating experience involved 80 children and 20 adults, all talking, reading, and drawing about their farm experiences. We shared snacks and farm songs before our visitors left.

*Figure 5. Children sharing the construction of the zoo project.*

## Provide Opportunities to Listen to Experts

During every project, it is important to find an expert whom the children can interview. The expert may be a parent, a professional, or someone else who knows more than the children do about the topic. Sometimes, we invited experts to come to school. The water meter reader came into our classroom with his tools and several water meters. A mother decorated cakes while we watched. Not only were the children able to ask questions, but they were also able to use project words that we had already learned. We were building more experiences upon which the children could scaffold further learning. Then when we went to the grocery store, we already knew a little about cake decorating.

Sometimes, our experts are at the field site. The farmer's wife addressed each of our questions. She and I had talked prior to our visit so she knew what was important to the children. In each of these instances, the children practiced listening etiquette—look at the speaker, raise your hand if you want to ask a question, listen quietly, etc.

## Provide Opportunities to Listen to Peers

The project group may not include all members of the class. Not every child is deeply interested in all projects, so daily reports about the projects keep everyone else informed. During meeting time, problems may be discussed, and other students may be helpful in providing solutions. At the end of the day, another reporter can tell about tomorrow's plans. Each of these times provides opportunities to listen and opportunities to answer questions.

## Read Topic-Related Informational Books to Children

As we begin to talk about a new project, I head for the library where I look for informational books with good illustrations. I read these books as we are "messing around" with a possible topic. They help to build vocabulary. They provide clear pictures or illustrations of these new words. They can be used later as references for drawing and sketching should a project develop. Even if the written text is too complex for my kindergartners, I still borrow the book if the photos are of good quality. I might paraphrase what has been written, or I might just talk about the pictures. Sometimes, the books are selected for their illustrations and are never read to the boys and girls. Taking the time to explore the topic in this manner allows us to build some vocabulary and vicarious experiences before narrowing the focus of the project.

## Conclusion

I believe strongly in project work for kindergarten children. I have seen firsthand how the four components of literacy—reading, writing, speaking,

and listening—are embedded in the projects we have investigated. I believe that the practical strategies I have mentioned, if used in conjunction with project work, will produce literate learners.

## Reference

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# Strategies to Incorporate Literacy in Project Work in Primary Grades

Dot Schuler

## Introduction

After attending an evening culmination at our school, the middle school assistant principal commented to me: "*If I had my own classroom again, this is what I would want it to be like. The subject areas aren't separated in real life; why do we separate them in school?*" Her comment affirmed for me that project work is an ideal approach for complementing the curriculum in that a project is carried out by the children as they intertwine curriculum skills in order to learn about something in depth.

The purpose of this chapter is to give examples of how teachers can apply various strategies to enhance the development of children's literacy skills as they are engaged in project work. I will share strategies that I apply with my second-graders. Although this chapter focuses on literacy skills and strategies for their application during project work, the reader will recognize how literacy skills interrelate with other subject areas, generating an interdisciplinary approach to teaching.

## Reading

### Practical Strategy 1: Provide Opportunities for Vocabulary Development

Many aspects of project work provide opportunities for the vocabulary development necessary for good reading skills. Numerous occasions that enhance vocabulary take place naturally as a result of following the framework for a project, according to Katz and Chard (2000). For example, our project on birds began with the webbing process. The children brainstormed in response to some open-ended questions that I proposed: Describe how birds move. What do they eat? What is good/bad about birds? Where can you find/keep them? What sizes can they be? What colors are they? What parts do they have? Why are they important? The children wrote a word or phrase on each of eight cards to express their current ideas. Then, we met as a group to share the results, grouping their responses into categories. The category *What is good about birds?* prompted one child to write that birds are aerodynamic. Many children asked him what that meant. "My dad and I built a car for Boy Scouts once," he said. "It was aerodynamic because its shape helped it move faster." As other ideas were shared and glued on the web in the correct category, the web was displayed and used as a reference for the remainder of the project. Ultimately, as our study progressed, we were able to add new information that we learned and cross out ideas that had been incorrect. By adding new information to each category, vocabulary growth was documented.

Phase 1 of a project with primary-grade children also entails the sharing of personal stories. Before each project, I send letters to parents to inform them of the topic, encouraging them to share personal stories at home with their child. Then, children share stories with their teammates. Sometimes, they each tell a personal story while their three teammates listen; teammates are then given opportunities to ask questions about the story. Other times, children share stories in pairs, taking notes and drawing pictures while listening, so that each child can paraphrase a partner's story, retelling it to the whole team. The interaction involved in listening, paraphrasing, and asking questions generates an abundant exchange of vocabulary (Figure 1).

*Figure 1. Taylor uses her illustration to help her tell her personal story about a tree to her teammates.*

Field experiences always expose children to new vocabulary. Listening to experts and adults other than the teacher is captivating for them. As they hear new words, they frequently ask about the meaning, spelling, and so forth. They record the words on their notes, and we document the collective notes on a chart after our trips. The charts are always on display for use as resources. Gradually, the children begin using the new words in their casual conversations as they work together on their investigations. For example, at the beginning of our study of the human body, I observed many children referring to organs as "guts." After a field experience to the local hospital and after sketching models of organs in the classroom (heart, brain, eye), children began using the correct terminology or referring to the organs by name (kidneys, brain, heart, liver, intestines, stomach, and so forth). New words frequently surfaced in their informal and formal writing, as well. Having been exposed to vocabulary associated with the topic also made it easier to read secondary resources for information.

Of course, teachers can model new vocabulary, too. As the children moved from table to table sketching the human body models, I used various vocabularies to model the use of words. For example, several of the children were preparing to draw the brain, but they had taken the model apart and were putting it back together so they could sketch it. They could not get it to fit together, and when they asked me for help, I suggested that they ask the brain *specialists* at the other table. This approach helped the children understand that a specialist has knowledge about a particular part or function of the body. They had become *specialists* by studying the brain and knew how the pieces fit together.

These examples show just a few of the opportunities for vocabulary development that occur *naturally* during the course of a good project. Of course, systematic instruction occurs, as well. One example of using systematic instruction to build vocabulary and complement a project is the teaching of how to write poetry. As an all-week assignment at the writing center during our Rock Project, the children drafted, revised, proofread, and published rock poetry. Choosing a favorite rock from their personal collections, they followed the format for cinquain poetry and drafted the poems. When we reached the revision stage, I asked them to use a thesaurus to change at least one of the words in their poem to another word. The fourth line in Kody's poem originally said, "It is very special." In the thesaurus, he found a synonym for *special*: he replaced *special* with *notable* (Figure 2).

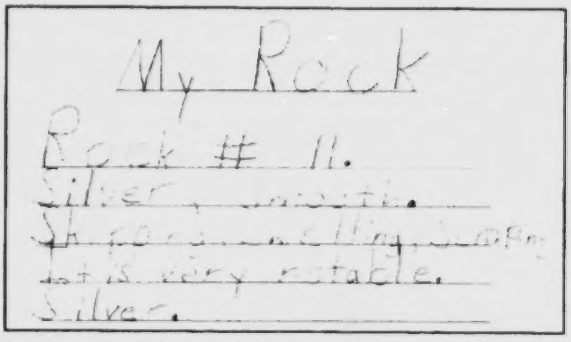


*Figure 2. Kody used a thesaurus to change a word in his poem.*

## Practical Strategy 2: Encourage Children to Use Informational Resources

After using primary resources, such as experts in the field, the children sometimes need additional information for their investigations. They use secondary resources, such as nonfiction books, the


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Internet, and so forth. To discourage children from simply copying what they read at the risk of not understanding the text, I ask the children to paraphrase the information for their use. If they have difficulty paraphrasing, I simply ask them to close the book and explain it to me or a friend. In one instance, Maren, studying germs, brought her book to me and said, "I want to write this down but I don't know how to do it without copying." To which I replied, "Okay, let's close the book and see if you can explain it to me." She explained beautifully in her own words that "our body has cells called defender cells that protect us from germs." "That's a very good explanation!" I said, and she wrote it down.

Informational books and other materials provide many opportunities to learn reading skills, such as using the table of contents and the index, scanning to determine what part of the text is useful for an investigation, and deciding whether or not to accept what is read at face value. Maren had recently read about the food pyramid during our human body project; one morning she told me that her dad and she had doubted if the bread/cereal group should be at the bottom of the pyramid, indicating that this type of food should be eaten the most. When visiting the hospital, she asked the doctor about it, and the doctor told her that the experts who had developed the pyramid were actually in the process of reconsidering that very thing! They were beginning to suggest that fruits and vegetables should be the largest section!

### Practical Strategy 3: Provide Opportunities for Publishing and Reading Child-Made Books

As the children begin to represent their new knowledge, one option considered is writing a book. Whether writing a regular book, pop-up book, or shape book, the basic parts of the book are front cover, title page, dedication page, first page with a main-idea sentence(s), pages with details, conclusion page, and, finally, pages that tell about the author(s). The books are read to the group at our meetings for sharing project work; children also enjoy reading their books to visitors during culminating events. Many times, children decide to donate their books to our class library after the project ends, so children now have access to a large selection of current and previously made books.

Furthermore, many of our reading or writing assignments are a result of systematic instruction in areas that lend themselves well to class books. Alliteration, riddles answered in a complete sentence, similes, math story problems, and poetry are examples of skills that are practiced as learning center assignments and then compiled to make books. In one instance, we wrote a class pop-up book when we were engaged in a water project. At the writing center, each child wrote a paragraph to describe something related to the topic, such as sink water, river water, and so forth; their assignment was to include similes in their descriptions. Each child's essay and pop-up illustrations were included in the book.

## Writing

### Practical Strategy 4: Provide Events That Encourage Writing

Project work provides copious events that encourage purposeful writing. Personal stories from Phase 1 are written and illustrated for display. Notes are written as children listen to experts or go on field experiences. Children paraphrase their research, writing notes to be used when making representations: books, webs, charts, diagrams, murals, paper-roll movies, graphs, and so forth (Figures 3 and 4). They often write informally in their daily journals about the project topic. As a part of systematic instruction, they may write a persuasive essay to help us decide what to study for our next project; they may write an expository essay to explain how to make a book, diagram, and so on. During Phase 2, children write in learning journals each morning. These journals are a daily log of our project journey. They record the date, tell what they are working on, describe how it is progressing, state their goal for the day, or express how they feel about their work.

*Figure 3. Kelci traces the letters on her flowchart.*

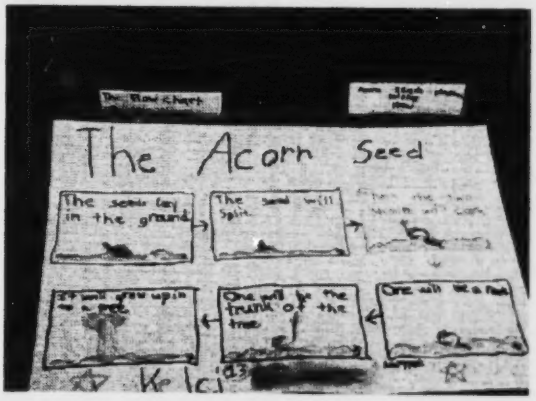


*Figure 4. Kelci's flowchart tells how an acorn becomes a tree.*

### Practical Strategy 5: Encourage Children to Create Thank-You Cards and Letters to Experts

Each time we go on a field experience or invite an expert to visit our classroom, the children thank the expert in writing. They often design thank-you cards, including at least one item of information they learned from the expert. They use our class charts of collective notes as a reference. They are also encouraged to let the expert know their personal feelings about the experience (Figure 5). When teaching letter writing, the children express their appreciation in the form of a friendly letter.

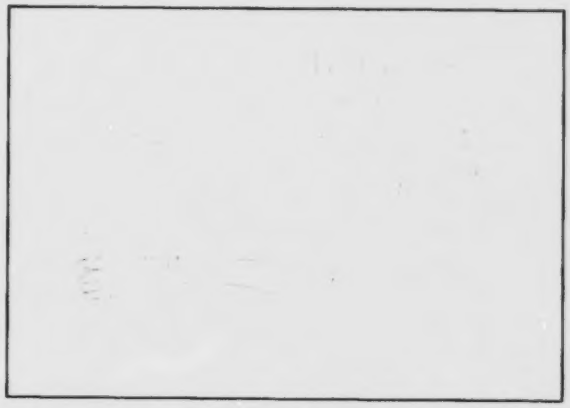

*Figure 5. After we walked along the riverbank with a park ranger who helped us spot birds, Randi wrote this card to him.*

## Speaking

### Practical Strategy 6: Plan for Language-Rich Group Gatherings

Our class meets at least three times a day at the carpeted area. In the morning before beginning project work, we meet to hear a few children read their learning journal entry to the group, so we know what they are planning to do for the next hour. We meet again right before lunch in order for several children to share progress on their investigations. After they explain their project to the group, other children may offer comments, suggestions, and encouraging remarks; they may also ask questions. The purpose of our meeting at the end of the day is for listening to several children read their daily journal entries. Sometimes, we have discussions that lead to differences, which lead to new questions; through these discussions, children learn how to wonder about things and ask questions, which are documented for all to see. When meetings occur frequently and there is adequate time for the meeting process, children gradually become comfortable speaking in front of a group. Eventually, some of the children may even offer to speak to parents as we gather for refreshments before each culminating event. Taking parents through the classroom and explaining each project is another opportunity for children to speak to others. They particularly enjoy explaining the displays to



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children from each classroom as they visit our room the day after evening culmination (Figure 6).

*Figure 6. Alan explains to first-graders how the fossil game works. the game was designed and created by Alan and several other classmates during our rock project.*

### Practical Strategy 7: Encourage Peer Coaching

As mentioned above, peer coaching sometimes occurs during our meetings when progress is shared. Children become receptive to suggestions and even constructive criticism from their peers. During our pet project, Wayne and Crystal constructed a model aquarium out of a cardboard box. The group was very complimentary of the model, but when they later shared the written explanation of the model (a bulleted chart explaining the parts/functions of the parts of an aquarium), the children said it was a "little hard to read." Wayne and Crystal decided the lettering was too small; they started over the next morning, and in the end, it was much more pleasing to them and their peers.

Before beginning project work each day, the children record their plans in their learning journals. Each child has a partner who trades journals with him and reads the entry; when each partner is satisfied with the entry, they join others at the rug for the meeting. When the children are reading their partners' journals, I frequently hear comments such as, "You forgot your period," "I think you left out a word," "Maybe tomorrow you could begin your entry with something different; you've been starting it the same all week." One morning, a child politely told me that she couldn't read her partner's journal. I didn't even respond because they immediately began a conversation, and I noticed her partner erasing and rewriting in several places. When they were both satisfied, the child told me, "I couldn't read it so I helped her with some sounds in her words and now I can read it." They contentedly joined the rest of the group at the rug.

During project work, I am unable to help everyone at once. I encourage children to help each other. Perhaps a group of children is having difficulty with the construction of a model and someone can give a suggestion or lend a hand... Maybe someone needs a piece of tag board and can't remember where it is kept... Maybe someone is having trouble knowing what to do on the computer... One day, a small group of children had decided to write a book using computer software. As we began to clean up for the day, I glanced at the computer screen, saw that the book was gone, and apprehensively asked the group, "Did you save your book?" "Yes," they replied, "Travis and Trevor showed us how."

## Listening

### Practical Strategy 8: Provide Opportunities to Listen to Experts

Proper listening etiquette is essential to bring the advantages of project work to children, including growth in literacy skills. What they learn while listening provides content that they write down in field notes, thank-you notes, and letters. The examples above show how listening to experts provides exposure to new vocabulary and experiences, as well as finding information. You can help children listen well by teaching them listening behaviors. Having frequent group meetings in the classroom offers practice in listening protocol. Before the children read from their journals, for example, they learn to ask for eye contact. When listening to others as they share progress on their investigations, children learn to wait until the peer presenter is finished before they offer comments and suggestions. When listening to

experts, children expect each other to follow the same etiquette. These are all good ways to teach children how to listen.

### Practical Strategy 9: Provide Opportunities to Communicate Content Knowledge to Peers

As children formulate questions for investigation, interest groups begin to form. Children working together on a project communicate constantly. They must first accumulate data, whether from primary or secondary sources. Next, they need to organize the data. They must then decide which data they want to represent and in what mode. Upon deciding which mode of representation to use, they must then determine each individual's responsibility in the ongoing task (Figure 7). Communication in this fashion requires cooperation, consideration, negotiation, and problem solving.

*Figure 7. As this group studied the local gas company, they decided to construct a model of the propane truck; Whitney and Anna worked on the front of the truck, while Haley tried to make wheels.*

### Practical Strategy 10: Provide Opportunities to Listen to Topic-Related Informational Books

I always wait until our current project is over before I read topic-related nonfiction books to the entire class. While they are in interest groups, working on subtopics of personal interest, I help them with their reading when they seek help. Otherwise, after the project ends, I might choose a book or two that I want them to hear, gather them together at the rug, and read to them. This way, they are always amazed at the new knowledge they have already learned from their own investigations and from their peers. When they recognize content information from the book that they have recently acquired, they are genuinely proud of their accomplishments!

## Conclusion

When engaged in good project work, the learning environment is not segmented into subject areas. Rather, the subject areas are interrelated, just as they are in real life. This is especially true when a teacher has a thorough understanding of the literacy knowledge and skills that children are required to learn and takes advantage of opportunities in the project to accomplish these goals. With knowledge and awareness of required curriculum and state learning standards, along with high-quality documentation, teachers can have confidence that children are applying countless basic skills while learning important subject matter during project work. Equally important, however, the children are being intellectually challenged, practicing social skills, and acquiring positive learning attitudes while applying these skills.

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# Strategies to Support Literacy Development in Second-Language Learners through Project Work

Rebecca A. Wilson

## Introduction

The purpose of this article is to provide teachers of young second-language learners with strategies to enhance literacy development during project work. Projects provide experiences consistent with research findings on language-minority education. Research examining language-minority student performance in classes taught through collaborative discovery learning (meaningful, cognitively complex, interdisciplinary content) has found that active learning accelerates language-minority students' academic growth (Ovando & Collier, 1998). These second-language learners may be in a variety of instructional settings including both bilingual and English as a Second Language (ESL) classrooms. Project work can take place in all of these settings.

The ability of a teacher to support literacy development of second-language learners depends on the language knowledge of the teacher. In early childhood education, literacy is most easily developed through the child's primary or home language. In this chapter, I will share examples and teaching strategies that I have used teaching in dual-language kindergarten and pre-kindergarten classrooms, which may be used if the teacher speaks the child's primary language. I will also share practical strategies for literacy development if the teacher does not speak the child's primary language. In either situation, support for literacy development can easily be found in project work.

## Don't Just Tell, Show

The more children *see*, the easier they comprehend– especially second-language learners. Many times, experts are good at thinking of demonstrations related to the project topic. Demonstrations provide children learning a second language with opportunities to practice speaking and listening. During demonstrations, children are introduced to new vocabulary in a natural way with concrete examples. When demonstrations occur as part of project work, children also practice writing through note taking and thank-you cards, in both their first and second languages. Language skills are also encouraged by peer interaction, through follow-up activities to the demonstration such as watching the video of a field site visit or examining artifacts from the demonstration. At the pre-kindergarten level, I have found that children share and listen especially well during follow-up activities when they are in small groups with others who speak the same language. Later, we get together as a large group and share information discussed in the smaller groups. In Figure 1, children are learning about applying drywall cement in the building project.

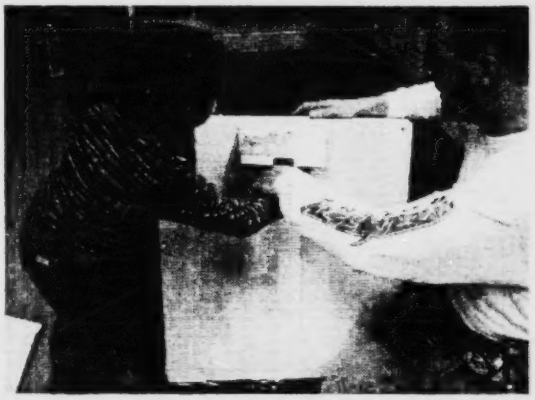

*Figure 1. Children learn about applying drywall cement.*

## Provide Opportunities for Role-Play

Creating dramatic play environments encourages role-play and the use of language related to the project topic, especially if children are involved in the creation of the play environment or structure. Figure 2 shows the children creating a soda machine as part of the Mexican Restaurant Project. Figure 3 shows the machine with the word labels.

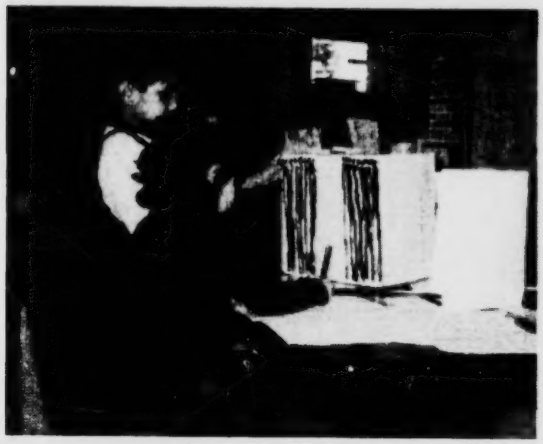

*Figure 2. Children creating a soda machine.*

*Figure 3. The soda machine with word labels.*

Providing plenty of time for play during project work is beneficial for second-language learners. In our Fire Station Project, this fall, children chose to create a fire truck in the classroom, complete with hoses. I observed complex play from my students. One day during center time, several English and Spanish speakers were pretending to put out fires. In order to keep the play sequence going, second-language communication occurred frequently in this role-play.

A native English-speaking child was on the student-made computer and radio, calling out the name of the street with the fire to two children dressed up as firefighters. As they fought the fire with their hoses, also created by students, I heard them communicating to each other, "Bring the hose over here," and "The fire's getting bigger!" As the Spanish-speaking "firefighter" reported in English that the fire was getting bigger, the child on the radio said that it had moved, "All the way up to 15th Street now!" A fourth and fifth child, one native Spanish speaker and one native English speaker, alternated between driving the fire truck and making the fire on a nearby chalkboard "grow" by adding more lines and scribbles. This native Spanish-speaking child demonstrated growth in receptive language as he interpreted the English words "bigger" and "grow" by making more lines on the chalkboard as the firefighters reported the status of the fire. When the fire was at last out, the two firefighters reported it to the two drivers, who then erased it from the chalkboard.

Children's play naturally supports language development. Role-play also offers many opportunities for literacy development in both first and second languages. Having paper and pencil near play structures encourages children to create their own props and to use writing in meaningful ways. For example, during a project on a Mexican restaurant in my kindergarten class, the children created menus. They wanted the menus to be in both languages, so that everyone who came to their restaurant "could read them." This activity involved several children, both Spanish and English speakers, writing the menus, comparing menus, and translating words. Their motivation for such a difficult writing task at the kindergarten level surprised me! A similar experience occurred when the children were doing a service station project. They wanted a form for customers to fill out when they dropped off their vehicles. The children wanted the form in both Spanish and

English, and spent about 30 minutes typing up the form on my computer. I later printed copies of their forms, to encourage children to use the writing during their play.

## Start with What Children Already Know

Graphic organizers, frequently used by ESL teachers, take place in almost all project work. These organizers can include planning webs, question lists, and word walls, as well as project books or dictionaries. When teachers use webs in project work, they often record a picture next to the words so that the second-language learners can understand what is being discussed. If the teacher speaks the language of the second-language learner, he or she can accept the child's contribution to the web or question list in either language and record a picture next to the words so that all children in the class understand what is being discussed. For example, during the Fire Station Project, our class was making a web. A Spanish speaker suggested that I write "camión" (fire truck) on the web. A few days later, the children were making a book of things they had seen at the fire station. Drake, a native English speaker who is a second-language learner of Spanish, asked me, "How do you say truck again in Spanish?" I was able to point to our web and say the first letter sound, and he was able to remember that the word was "camión." The web validates everyone's knowledge in the room and gives children a chance to build on the information they already know. All learners in my room refer back to the web often when they are working independently in journals or want to write a particular word.

If the teacher does not speak the language of the child, she or he can still invite second-language learners to contribute to the web by asking them to draw an illustration of their idea on the web. For example, if the children were studying the post office, and the child thought of the mail bag, but didn't know how to say it, he could draw it. Once the child had drawn the mail bag, the teacher could reinforce this by saying, "Yes, that's the mail bag. That was a good idea." A second-language learner could also point to a picture in a book of something he wants to have on the web. Another strategy I often use is cutting photos of words pertaining to the project and writing the word in both languages onto word cards. These cards are very popular with children and can be of service to a native speaker, as well as a child learning a second language. I usually color code the languages; for example, Spanish is always green and English is always red, so as not to confuse young writers. If the teacher does not speak the language of the child, he or she can show the parents pictures and ask them to write down some key words from the project. This approach facilitates both parent participation and a feeling of inclusion and acceptance to the second-language learner.

## Repeat and Practice

Because the Project Approach focuses on a topic in-depth for long periods of time, teachers of second-language learners can easily support repetition and word patterns. During projects, *all* children in the class are talking about new words, asking questions about what words mean, and writing or drawing pictures of words that interest them. Because everyone is engaged in learning new vocabulary, second-language learners are less likely to feel embarrassed or shy. It is important for second-language learners to have the chance to hear words several times and also to have many opportunities to repeat the words in meaningful situations. At times, I look at the specific vocabulary being used by children and am amazed to remember that they are only 4 or 5 years old! Halfway through the Combine Project, we visited a local tractor dealership to answer children's more detailed questions about tractors and combines. We walked into a large room where they were repairing vehicles, and one of my students immediately said, "Look, Mrs. Wilson, there's an auger!" In the Garden Project, children in my class were referring to the "three-tine cultivator." Children are also presented with opportunities to use second language meaningfully through writing thank-you notes and invitations to project events.

## Tailor Questions for Language Level

Every project involves the investigation of children's questions. Questions provide children

with a chance to use their second language to ask experts. For example, a Spanish speaker was the expert in our Mexican Restaurant Project. Native English speakers worked to express themselves in Spanish. In addition to speaking, teachers can also use questions to maximize opportunities for writing and reading development. I write the children's questions on index cards with illustrations next to words to remind second-language learners, as well as emergent readers, what the question says. Not only does the question card help the child to be prepared for the expert interview, it also helps the expert. Many times, the expert will read the child's question from his or her clipboard if the child is shy or reluctant to speak in the second language. I also encourage children at *all* levels to ask questions. The examples in Figure 4-6 display a series of kindergarten children's answers to their questions in their second language during the Garden Project ranging from simple yes/no answers to more complex writing.

*Figure 4*

*Figure 5*

*Figure 6*

If the teacher does not speak the language of the child, he or she might work with the child individually during center time and show some photos of the related topic. The teacher might ask the child to point to what he or she wanted to know more about; for example, the wheel on the tractor. Children are highly motivated to communicate to get their questions answered. For example, in the Garden Project, Estephanie worked hard to learn the English word for hose, so she could ask the visiting gardener if he used a hose. In Figure 7, the children's questions that related to how many of various items were on a machine were put on a tally sheet for children to use. This approach encourages discussion but also does not require reading for participation.

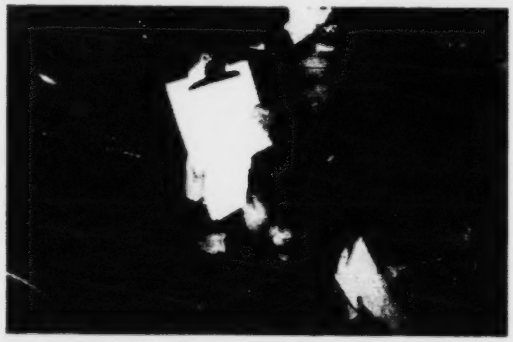

*Figure 7. Children's questions were put on a tally sheet.*

## Engage Parents in the Project

When choosing a topic, consider whether the topic is being mentioned in the everyday play and conversations of second-language learners. It is

helpful to have some of the projects during the school year focus on a topic relating to the culture or home life of second-language learners in the class. The more relevant a project topic is, the more likely children are going to be to speak, listen, write, and read about that topic. Another way for teachers to support native language is by inviting experts who speak the minority language and are part of the community. For example, when my children were interested in restaurants, I specifically selected the Mexican restaurant as a field site visit because I knew many of my students were familiar with the restaurant and their employees were native Spanish speakers. Often in larger businesses, such as a bank, at least one employee speaks another language. It is always worth investigating before the field site visit to see whether there is anyone on hand who may be able to support the second language. Even if there is only one child who speaks a second language in the classroom, the teacher can still support and value that native language by connecting the child with the speaker.

Parents can be a great source of information in providing vocabulary words in their native language for the project, especially if the teacher does not know the language. One way of using the vocabulary words is by creating a print-rich environment in the classroom with signs in both languages. Many times, parents of second-language learners have artifacts relating to the project that have print or writing. For example, during a beauty parlor project, a Chinese family might be able to bring in a shampoo bottle with Chinese print, or during a mail project, a Brazilian family might be able to bring in envelopes from Brazil. Additional artifacts might include cookbooks, food boxes, or supermarket ads. Parents are valuable resources and can also assist with literacy development on field site visits by taking dictation about the sketches of second-language learners.

## Conclusion

Over the years, I have found that many literacy goals are met through project work. No matter what the topic is, children are involved in listening and peer discussion, writing for a purpose, forming questions, and research. Because project work is visual, meaningful, and relevant, it is a valuable resource for teachers of second-language learners.

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# Look! See How They Are Learning

Judy Harris Helm

doc·u·ment·ed, doc·u·ment·ing, doc·u·ments (-mènt')
2. To support (an assertion or a claim, for example) with evidence or decisive information.

*The American Heritage Dictionary of the English Language, 3rd ed.*

## Documenting Literacy

Many parents and educators are concerned about the problems some children are having when learning to read. They want to be sure that children are mastering these important skills. Literacy instruction needs to occur throughout the day, including direct instruction at the appropriate level for the age of the child, and in a variety of contexts besides project work. However, project work provides some unique opportunities for both literacy instruction and the practice of literacy skills. It is in project work that we can provide practice of literacy skills and observe whether these skills have become useful tools for a child. In other chapters in this book, Beneke, Gottlieb, Schuler, and Wilson provide many ideas for integrating literacy skills into project work and describe ways to maximize literacy learning in pre-kindergarten, kindergarten, and primary classrooms. An important part of increasing effectiveness of literacy learning in project work is to be sure that it is included in the documentation process.

Documentation enables the teacher to focus on the literacy learning occurring and at the same time help others see how that learning is occurring. There are many reasons that teachers document during project work. They document to facilitate decision making during the project process, such as to determine children's main interests, to find out what underlying questions they have, or to plan ways to deepen project work. However, in addition to guiding the project process, documentation also has the potential to inform teachers and others of children's knowledge and skills in academic areas. By carefully collecting, analyzing, interpreting, and displaying evidence of children's learning, a teacher develops a deeper understanding of the learning occurring and communicates that learning to others.

## How Documentation Relates to Literacy

Just doing a project in a classroom does not guarantee that the classroom will become literacy rich and that the children will learn and practice literacy skills. To make sure that children learn and practice literacy skills requires teacher facilitation. Documentation is a tool for the teacher to use to make sure that this learning is occurring. Documentation relates to literacy instruction in the following ways.

### 1. Good-quality documentation can enhance instruction in the area of literacy.

Teachers are more effective when they document. Perhaps the greatest value of comprehensive documentation is its power to inform teaching. Teachers who have good documentation skills are more likely to make productive decisions when planning literacy experiences for their children. These decisions include how to incorporate literacy in the classroom, what to do next, what questions to ask, what resources to provide, and how to stimulate each child to apply reading and writing skills. The more information a teacher can gather to inform these decisions, the more effective a teacher is likely to be.

When teachers document children's learning during engaged experiences such as project work, they are

able to do a better job of moving children toward literacy. Documentation can provide the following:

- insight into the reading process when it occurs in complex learning experiences such as project work,
- a framework for organizing teachers' observations and recording each child's progress as they apply reading and writing skills, and
- evidence of how children are learning literacy skills through active exploration and interaction with adults, other children, and materials.

Documentation also can

- enable the teacher to assess a child's application of literacy skills so the teacher can increase the difficulty, complexity, and challenge of an activity as children are involved with it and as they develop understanding and skills, and
- provide insight into the children's feelings and emotions during literacy experiences and the development of positive dispositions toward reading and writing activities.

Lev Vygotsky's sociocultural theory explains the importance of teachers' decisions in maximizing learning. According to Vygotsky (1978), the teacher is most effective when teaching is directed toward a *zone of proximal development* for each child. Children learn easiest when teacher decisions result in learning experiences within that zone of development. The teacher needs to assess a child's skill, probe the child's thinking as he or she uses the skill, and provide learning experiences that will build a bridge or "scaffold" to higher level skills (Berk & Winsler, 1995). Often, the most helpful information for the teacher is data that reveal what the child partially understands, what the child is beginning to be able to do on an inconsistent basis, or what the child is trying to integrate into existing knowledge. As the teacher collects field notes and other information during project work, she can see how valuable this practice can be for children.

Documentation can also help the teacher make decisions about when additional support is needed for a child's literacy. For example, a teacher can observe when it is helpful for a child to learn how to use indexes or tables of contents in books. If the teacher collects a child's work over a period, the teacher can see if the child is progressing as expected or if mastery of a skill is just around the corner. When the teacher does not see mastery or emerging skills, she can provide direct instruction and help during other parts of the day.

### 2. Children value what is documented.

Children in classrooms where teachers document their learning perceive that learning to be important and worthwhile. This is especially true of literacy. Extensive documentation of children's work helps children perceive that their efforts to learn are important and valued. Teachers who carefully document have observed that as they increased the attention given to documentation, children have become more careful about their work and more evaluative. When teachers document children's first, second, and even third attempts at a task, such as making a poster for a display, children begin to reflect upon their own skill development. Children also understand the effect evidence of their learning has on their parents through documentation. Even the youngest children can see the excitement that evidence of their emerging ability to read and write can generate in their parents.

### 3. Documenting children's literacy learning in a variety of ways enables teachers to respond to demands for accountability.

There has been an increase in demand for accountability. Schools and other early childhood programs are finding it necessary to do a better job of informing constituencies about how children are learning and the effectiveness of curriculum experiences. When parents see children's field notes, they see how the children are using writing for a purpose. When they see lists of words that children knew before a project displayed next to a list of words they knew at the end of the project, they understand how children's vocabulary has grown. When they see pictures of children using

books to answer questions, they understand that children are developing an understanding of the value of books and reading. These experiences with project documentation can be very powerful and are often more memorable and convincing than test scores or summaries of school improvement. It is difficult not to conclude that children are learning to read and write when right there in front of you are samples of their reading and writing. At the same time, the need to document literacy experiences to show others insures that the teacher will take the time to make sure that they occur for each child.

## Ways to Document Literacy

Most teachers doing projects with children have some familiarity with documenting children's learning. However, many teachers may not be fully aware of how many different ways there are to document (Helm, Beneke, & Steinheimer, 1998). The more familiar a teacher becomes with the variety of methods, the better the chance that the teacher will document meaningfully. To be most effective, teachers vary their documentation to match the learning experiences of the children. For example, a teacher who wanted to know what a child knew about a topic might collect the child's drawings about a topic but might not think to have the child write (or copy) labels for the parts of the item drawn. The teacher may assemble a bulletin board but not think to have the child dictate or write a narrative to accompany a photographic display. Knowing a variety of ways to collect literacy work also enables the teacher to do a better job of getting accurate information about a particular child. For example, a child may not attempt to read difficult words in fiction library books or reading texts but may put forth extended effort to decode difficult words as he tries to read the manual for a piece of equipment he is studying.

There are as many different ways to document learning as there are ways that active, engaged children try to make sense of their world. Here are some ways that lend themselves especially to the area of reading and writing. The appendix to this chapter lists types of documentation and specific ways this documentation occurs in project work.

## Project Narratives

A narrative statement, which tells the story or history of a project, is the most traditional method of documentation. Stories are a powerful way to help others understand events and experiences of other people. Narratives can take the form of stories for and by children, narratives for adults in the form of books and letters, or displays that visually tell the story. They are usually written over a period and focus on evidence of change and growth in knowledge, skills, and dispositions.

To take advantage of the interest that comes from an evolving project, teachers can write narratives such as those that accompany hall displays and then continuously update the narrative as the children's work proceeds. Parents and children will look at the narratives.

## Products

Literacy products such as books, signs, graphs, charts, and narratives are the most obvious means of documenting literacy learning. Writing samples are, perhaps, the most familiar product perceived by adults as proof of children's learning to read and write. Labels on pictures, webs, songs invented and written down, construction signs, collections of data, and organization of materials and oral language samples are also categories that produce significant documentation. Lists of words on word walls can document vocabulary growth.

Group-constructed play environments also are sources of documentation of literacy skills. The children build what they know with the skills they possess, and they often include literacy-related materials in the environment, such as menus and signs. Children are also motivated to create literacy play objects such as order pads.

## Checklists

Observing and recording reading and writing skills and then recording what is observed on a checklist or into a structured portfolio is almost a necessity for the teacher to know exactly what knowledge, skills, and dispositions children are developing

regarding literacy. These checklists may cover many areas of development including language and literacy development. The teacher may also use checklists that focus on the areas of reading and writing. In recent years, observation systems, such as the Work Sampling System (Meisels, 1993), have been developed that coordinate checklists based on standards. The checklists are used systematically to document growth and development of skills over time. Project documentation can provide the evidence needed to mark these checklists. For example, observations of a child during project work will provide insight for the teacher to mark the item "uses print materials to find answers to questions." These checklists enable a teacher to reliably identify skills, knowledge, behaviors, dispositions, and accomplishments as they emerge; to support and encourage them; and to know when to provide additional direct instruction.

## Individual Portfolios

Documentation during project work goes beyond observations and checklists. Most teachers also gather data, write anecdotal notes, and collect children's work samples for portfolios. Data can be gathered and then recorded in individual portfolios. For example, a teacher might keep a list of which children were able to read the class-made project history book independently. Anecdotal notes about reading behaviors, such as asking for help decoding the name of a bird, also can be part of a portfolio. Teachers often collect children's writing during project work for the portfolios. The sources of these samples are many (see the appendix).

When the teacher systematically collects these samples of children's work over time, and from project to project, she is able to observe and document growth in writing. This documentation is more significant when it is linked to a "comprehensive and developmentally appropriate picture of what children can be expected to know and do across all domains of growth and learning" such as an assessment system (Meisels et al., 1994), which combines a standards-based checklist with a portfolio. Portfolio items can also be collected as evidence of a child's progress as measured on a checklist.

## Self-Reflections

Self-reflections provide the most accurate assessment of the child's emotional involvement with learning. Children will often make statements about how much they enjoy reading a book on a topic of a project. If dispositions are an important part of project work, then documentation of dispositions is also important. Dispositions can be documented by collecting statements from the children, observing the amount of time that children spend doing an activity, or recording discussions. Dispositions can also be documented through photos, which capture children's emotions and involvement in project work.

## The Power of Documentation

In conclusion, documentation is a powerful tool to help teachers to do a better job of teaching reading and writing. It can also be a powerful way to show others how these skills are developing in a classroom.

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# APPENDIX

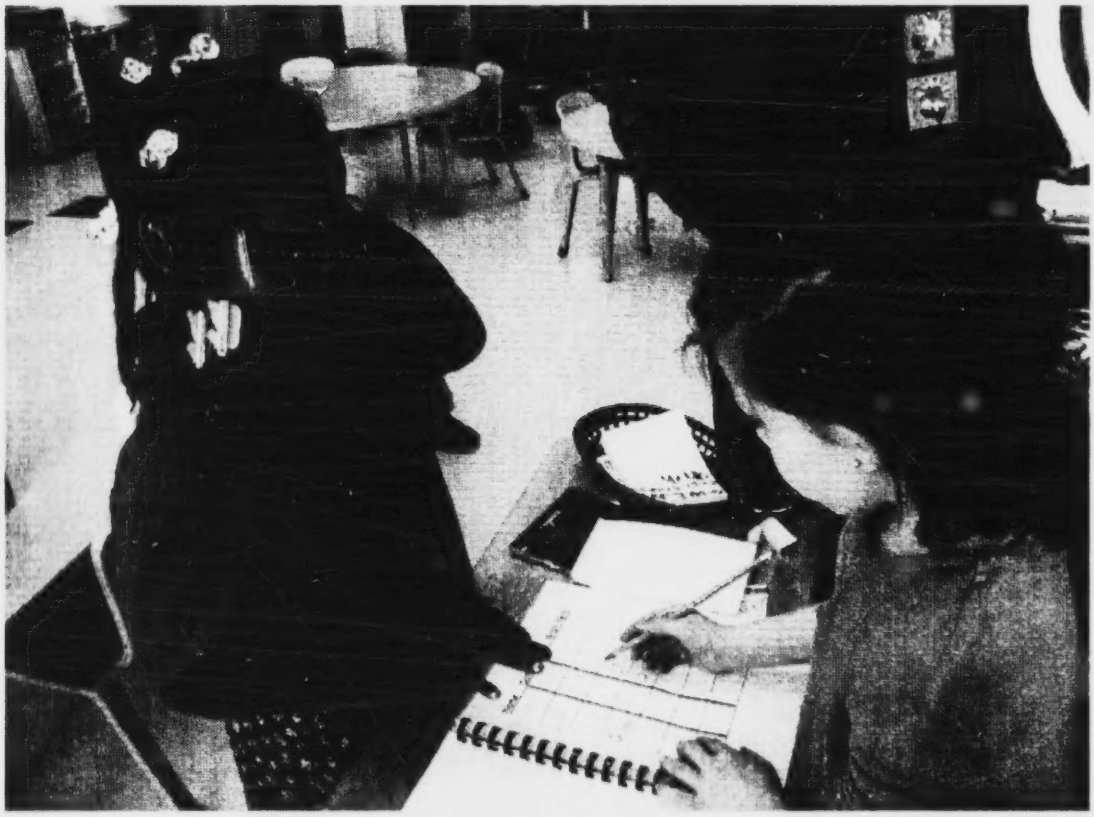
## Types of Documentation for Literacy

| Type of Documentation | Description and Literacy Knowledge, Skills, and Dispositions That Can Be Documented | Sources of Literacy Documentation in Project Work |
|---|---|---|
| **Narratives of Learning Experiences** | *Narratives are stories of learning experiences of individuals, small groups, or the whole class. Narratives in project work may be dictated or written by children.*<br>Narratives can be used to document<br>• Print-sound code (as children read)<br>• Getting the meaning from print (Comprehension)<br>• Conventions of print<br>• Developing reading habits as they choose to read | Dictated stories of the project<br>Child-written stories<br>Displays on projects<br>Books or explanations for parents of a part of a project (such as a field site visit)<br>Books or stories written for children (such as a book on worms) |
| **Products** | *Products of children are artifacts they create, such as signs, menus, notes, display labels.*<br>Products can be used to document<br>• Print-sound code (as children write)<br>• Getting the meaning from written materials<br>• Writing for a purpose<br>• Using literacy<br>• Phonemic awareness | Spoken language as collected in anecdotal notes or audio/visual tapes<br>Written language as in signs and directions, captions to photos and drawings, letters, labels, child-made books<br>Constructions with labels such as play environments, Lego or block structures<br>Notes on drawn pictures or paintings<br>Data collection forms and surveys<br>List of words webs or other records |
| **Observations & Checklists** | *Observations are made by the teacher and recorded as specific knowledge or skills on a developmental checklist, curriculum checklist, or anecdotal notes.*<br>Observations and checklists can be used to document<br>• Print-sound code (as they attempt to read)<br>• Getting the meaning (as they read manuals, books)<br>• Understanding language (as they develop specific vocabulary)<br>• Phonological and phonemic awareness | List of words spoken in reports and webbing<br>Anecdotal notes indicating observed literacy knowledge, skills, and dispositions<br>Behavioral indicators of dispositions regarding literacy (expression of interest in books, time spent on reading and writing, self-selection of reading-writing activities) |
| **Child Self-reflections** | *Children's statements of understanding their own preferences of activity, enjoyment, or interest in content areas, pride in accomplishment, acceptance of need for persistence and hard work.*<br>Child self-reflections can be used to document<br>• Dispositions toward reading<br>• Dispositions toward writing<br>• Dispositions to work hard to understand and to write and communicate | Child's statements of enjoying reading when interacting with project books and materials about the topic<br>Child's enthusiasm about sharing reading and writing about the project<br>Child's expressions of pride in accomplishment in project work<br>Child's recognition of his or her own persistence |
| **Individual Portfolios** | *Work is collected at specific intervals to show growth and to document unique and outstanding work of the child.*<br>Portfolios document<br>• Writing and reading skills over time<br>• Print-sound code<br>• Getting meaning<br>• Reading-writing habits<br>• Language use and conventions | Field site notes, thank-you notes to experts<br>Captions for photos taken during project work<br>Record of books read during project work<br>Photographs of children using books as resources |

Adapted from Documentation Web. Helm, J., Beneke, S., & Steinheimer, K. (1998). *Windows on Learning Documenting Young Children's Work.* New York: Teachers College Press (p. 36).

*Section 2*

## Project Implementation



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# The Project Approach in Action

Sylvia C. Chard

## Introduction

Projects, like good stories, have a beginning, a middle, and an end. This temporal structure helps the teacher to organize the progression of activities according to the development of the children's interests and personal involvement with the topic of study.

During the preliminary planning stage, the teacher selects the topic of study (based on the children's interests, the curriculum, the availability of local resources, etc.). The teacher also brainstorms her own experience, knowledge, and ideas and represents them in a topic web. This web will be added to throughout the project and used for recording the progress of the project.

## Phase 1: Beginning the Project

The teacher holds discussions with the children to find out what experiences they have had with the topic and what they already know about it. The children represent their experiences and show their understanding of the concepts involved in explaining them. The teacher helps the children develop questions that their investigation will answer. A letter about the study is sent home to parents. The teacher encourages the parents to talk with their children about the topic and to share any relevant special expertise.

## Phase 2: Developing the Project

Opportunities for the children to do fieldwork and speak to experts are arranged. The teacher provides resources to help the children with their investigations; real objects, books, and other research materials are gathered. The teacher suggests ways for children to carry out a variety of investigations. Each child is involved in representing what he or she is learning, and each child can work at his or her own level in terms of basic skills, constructions, drawing, music, and dramatic play. The teacher enables the children to be aware of all the different work being done through class or group discussion and display. The topic web designed earlier provides a shorthand means of documenting the progress of the project.

## Phase 3: Concluding the Project

The teacher arranges a culminating event through which the children share with others what they have learned. The children can be helped to tell the story of their project by featuring its highlights for other classes, the principal, and the parents. The teacher helps the children to select material to share and, in so doing, involves them purposefully in reviewing and evaluating the whole project. The teacher also offers the children imaginative ways of personalizing their new knowledge through art, stories, and drama. Finally, the teacher uses children's ideas and interests to make a meaningful transition between the project being concluded and the topic of study in the next project.

This summary explains some of the common features of projects, but each project is also unique. The teacher, the children, the topic, and the location of the school all contribute to the distinctiveness of each project.

# Why Does the Snow Get Dirty? My First Experience with the Project Approach

Thomas Myler

## Introduction

"Why does the snow get dirty" is the essential question my kindergartners asked the first time I attempted doing the Project Approach in my classroom. It is certainly an appropriate and logical question to ask, especially by a 5-year-old as he watches pristine white sheets of snow transform into sandy, black mountains, lining the edges of the streets and parking lots of town, in just a few days. But this wasn't the question I had in MY head as I thought and planned my winter snow unit. And that, I discovered, is just what the Project Approach is—answering the children's question on a subject and not the teacher's question, no matter how child centered the teacher may think it is.

The winter of 2002–2003 was a snowy one in Connecticut. We had a snowstorm in November that closed schools the Wednesday before our Thanksgiving break. Although snow at Thanksgiving is not unheard of in the Northeast, the 8 inches that was dumped on us certainly is. When school reopened, my student teacher had started a thematic unit on "Old Favorites": nursery rhymes, Mother Goose, fairy tales. She was reading and comparing two stories—*Three Little Kittens* and Jan Brett's version of *The Mitten*. *The Mitten* was certainly an appropriate choice to study as the snow continued to fall throughout most of December. However, rather than continue in the "Old Favorites" theme, I switched gears and went into my winter/snow unit to take advantage of what was going on in the children's world around them. I worked on building schema with the children. We read stories about winter and snow, we worked on small group reading and doing center activities that revolved around winter and snow, we brainstormed lists of things we do in winter and snow, and we wrote about winter and snow. All the while, white, powdery snow continued to fall and turn brown in front of our eyes. Black paved parking lots were slowly turning into frozen sand-covered deserts. I knew why and how this was happening, but apparently the 5-year-olds in my class did not, and unbeknownst to me, they were beginning to think about it.

Right before our holiday break, I asked the children what THEY wanted to learn about in class when we returned to school in January. My hope was, of course, that with all the snow on the ground and all the reading we were doing on snow, that snow would come up. We brainstormed a list of possible topics, and along with butterflies and flowers, winter and snow were listed. So we held a discussion and agreed as a class that we would study snow now and butterflies and flowers in the spring.

During vacation, I worked on a teacher web on "snow." I listed all the possible topics branching off from snow, wrote down the needed materials, decided where the curriculum goals fit in, and determined possible field trips. I decided to focus specifically on this year's kindergarten literacy goals in the area of reading comprehension: building schema, questioning, and inferring. Although these are reading comprehension goals, I knew they could also be taught through a scientific and investigative approach. I spent the rest of my vacation planning and collecting more books on snow. I had it in my mind that my students would want to learn about snow and how it is made up of six-sided crystals. I looked specifically for those types of books. I also thought the children would want to learn more about snow sports. I contacted a local ski resort to see if I could arrange a field trip. I planned and organized lessons designed to build a

common background of shared experiences for all the students in class. Finally, I looked for experiments that would involve making predictions and inferences. I was ready, I thought!

*Figure 1. Making a snowman on the playground.*

In January, we returned to school. That first week back, I focused on building a common schema for all the students. Luckily, it snowed again, so we were able to go outside onto the playground. We did all the things they did in the books. We built snowmen, made snow angels, went sliding, threw snowballs—just had a ball. The next day, we brought snow into the classroom and put it in the water table. The children worked in small groups playing in the snow with shovels and small containers. As they worked, their comments were carefully recorded by an adult volunteer. Later, the notes were reviewed to see what the children were actually saying and asking. We used microscopes, connected to laptop computers, to look at the snow as it melted. Again, the children's comments were scripted and reviewed.

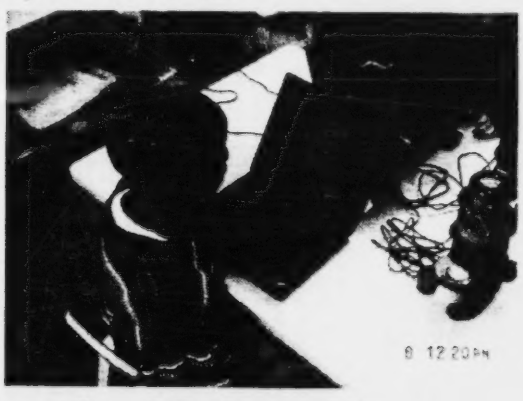

*Figure 3. Watching snow melt.*

That week, we also worked on two experiments revolving around winter clothing. We kicked off the experiments by reading *The Jacket I Wear in the Snow*. Both experiments included making and recording predictions, based on new hands-on learning experiences, testing the predictions, and then discussing the results by comparing them to the original predictions.

## Experiment 1

Which kind of cloth would keep you warmer? Four jars were wrapped in four different kinds of cloth. After the children made their predictions, hot water would be poured into the jars. A thermometer in the jar would indicate the water that stayed warmer longer. The children worked in small groups with an adult. Each child felt all four of the cloth samples. The children decided which one of the cloth samples would keep the jar, and themselves for that matter, the warmest. They indicated their choice by placing a unifix cube next to the jar. The adult recorded their comments as they worked. Next, the jars were filled with hot water, and we watched to see which jar stayed warmest the longest by reading the thermometer. It turned out that fleece won. The light bulbs went on for many of the children as they realized that they were wearing fleece pullovers. The experiment helped them to make a connection to real life and realize why much of our winter clothing is made from fleece. We later worked on a project where the children made a hat for a self-portrait of themselves. They chose the material that would keep their heads the warmest. The children all chose fleece.

## Experiment 2

If you stuck your hand in snow, which kind of cloth would keep your hand warmer? Two plastic bags were lined with two different kinds of cloth. One bag was put on each hand of the child. The child placed one hand into the snow, then the other. They waited to see which hand got cold first. Before doing the experiment, though, the children felt the two different kinds of cloth. Using what they knew, they chose the one they thought would be warmer. They marked their response on a chart.

completed the experiment, and then discussed if their predictions were correct.

## The Project Develops

At the end of each day, we met as a class to talk about what we were learning. I kept a running list of the children's comments and questions about the snow on chart paper. The questions and comments that kept coming up revolved not around skiing or how many sides a snow crystal has but rather why snow is slippery, how it turns to ice, why school is closed on snow days, why cars get stuck in the snow, why we shovel snow, how we get around when it snows, and why the snow turns so brown and gets so dirty. I realized that I needed to refocus my efforts in response to the interest of the children—in other words, focus on snow removal not snow crystals.

So I made another trip to the library and found *Katy and the Big Snow*. We read the story together and held more class discussions. The children made illustrations of plows. We began webbing all our ideas on snow to see how they related and fit together. The children were discovering that snow can be both fun and dangerous. Slowly, by answering some of our questions and asking others, sharing our experiences and insights from the experiments, we narrowed down our question to the final one: "Why does the snow get dirty?" All of this discussion was driven by the children's interest, not the teacher's.

Armed with this final question, I worked on the last part of the project. Rather than go on a field trip, I brought the field trip to us. I contacted the grounds department of the University of Hartford, because our school is located on their campus. They were more than happy to come over and help to answer our questions and meet with the children. I met with the lead groundsman, Jeff, on two separate occasions. I explained the project to him and shared the children's interest and questions. We agreed that he would come back the next day with a plow truck with a sander on the back.

The following day dawned sunny but cold; the temperature was only about 20 degrees. Before the plow arrived, the children practiced asking four questions about snow removal and then our ultimate question, "Why does the snow get dirty?" We learned that questions are a way to gather information. They often start with the words why, how, what, when, or where. Precisely at 10:45 a.m., Jeff and two of his cohorts arrived. We bundled up, went outside, and stood around the plow in a sand-covered parking lot surrounded by mountains of dirty snow.

*Figure 3. The children examined a snowplow.*

The children began asking their questions. Jeff got into the truck and showed them how the plow could be moved up and down or side to side to push the snow off the road. He explained that plowing is the first thing they do after a snowstorm. Next, our question was asked: "Why does the snow get dirty?" Rather than ANSWER the question, Jeff SHOWED them why it gets dirty. I could not have been any happier with how he did it.

First, Jeff kicked together a small pile of snow. Then, he scraped up some sand, scattered on the parking lot, with his hand and sprinkled it on top of the pile. We all watched. The white snow, combined with the brown sand, made dirty snow! So that was it—the sand makes the snow dirty! But Jeff did not stop there.

*Figure 4. Jeff demonstrated how to melt snow.*

When I had met with Jeff the day before, I held told him that the children thought the sand came from the ground, or the cars' tires, and not from the plows. So he went on to demonstrate the equipment on the back of the snowplow, the sander. He explained and showed us how sand is spread through the use of a sander. He told us many places put down sand, like our school, to help make the roads less slippery after it snows. But then he added his own twist. He told us that at the university they do not use sand but rather a salt and alcohol mixture. He demonstrated why. Again, he made a pile of snow, but this time, he sprinkled the salt mixture on top. In a matter of minutes, the snow began melting. The children were amazed. Jeff went on to tell them that the salt melts the snow cleanly without leaving any residue, thus the snow will disappear and not become dirty. The children thought that was a better solution to snow removal rather than having dirty snowbanks all over the place.

We thanked the experts and went back into the classroom armed with the knowledge we had gained from our field experience. We worked on two more experiments, making predictions, testing them, and finally discussing the outcomes. One experiment was deciding which plow shape worked better. Using cardboard strips, the children acted like a plow pushing snow out of the way. They plowed sand out of the way in the sand table. They discovered that a straight plow, like Jeff's plow, worked better than a pointed plow like Katy's in *Katy and the Big Snow*. The straight plow made a larger path in the bottom of the sand table.

The second experiment confirmed what we learned outside with the snow removal experts. We brought in three plates of snow. I sprinkled one with sand, the other with the salt mixture, and the third one I left alone. Using tally marks, the children indicated their choice of which would melt the fastest. The salt mixture won hands down!

Finally, the children made new illustrations of snowplows and sanders. Using their new knowledge of plows and some brochures that Jeff had given us on snowplows, the children drew far more detailed illustrations, focusing specifically on the plows than they had in earlier pictures. Below are samples of the children's work as they drew plows and sanders.

*Figure 5. The children made new illustrations of snowplows and sanders.*

*Figure 6. A drawing of a snowplow.*

## Conclusion

As I began wrapping up this, my first project, I reflected on what my students had learned. They could certainly answer our final project question as is indicated by our interactive writing piece. They would say that sand from the plows makes the snow dirty. They can even elaborate and explain that salt is better than sand because it melts the snow and DOESN'T make it dirty. Further, the children can show which plow is more effective at removing snow by placing their hands together at the fingertips, indicating a straight plow. But what of the comprehension goals that I had set out to meet: building schema, questioning, and inferring?

All three comprehension strategies were continuously addressed in real and authentic ways throughout the project. We built schema as we read about and interacted with the snow. And what better way of practicing questioning is there than actually formulating questions for a purpose as we did for the expert visit? Finally, we had to use much of our shared schema to make inferences and predictions in the experiments we undertook. So, yes, I have met those goals. In addition, by following the children's interests, and not strictly my own, the class experienced high levels of student engagement and excitement. I was able to continue to meet the kindergarten curriculum goals, as well as involve parents.

This project was a success for me and my class! It was a meaningful, child-centered approach to teaching where the students were truly active participants. The students were empowered to make decisions about what to learn, were able to learn skills and apply them to real-life situations, and were able to work in an exciting environment. Who would have thought that dirty snow could be such a powerful teaching tool!

# Deepening Project Investigations

Nancy B. Hertzog & Marjorie M. Klein

## Introduction

Is a bulldozer the same thing as a crane? Is frost the same as snow? The answers to these questions are matters of consequence to 5- and 6-year-olds. Students in the midst of project investigations are motivated to pursue answers to their own questions. The teacher's role in facilitating inquiry is no easy task, and getting students *deeply* involved in a topic under study is even harder. This chapter will address how teachers can provide greater depth and complexity to project investigations. After all, it is the teacher who plays the critical role of designing activities that enhance the depth and complexity of project work.

The degree to which the students are engaged in critical thinking, designing, experimenting, and inquiring defines the richness of the learning experiences. We propose five specific strategies teachers can use to deepen the inquiry: (1) model curiosity, (2) promote and facilitate discussion, (3) hone questioning skills, (4) create contexts for experimentation and representation, and (5) use the language of thinking.

## Model Curiosity

When teachers model curiosity, students have opportunities to reason. Notice in this example what the teacher said when a student shared his observation:

*Konan:* I dropped 3 apples in the pond. 2 apples floated and 1 sank.
*Teacher:* That's interesting. I wonder why.

Teachers model curiosity by listening carefully to what the students say, thereby demonstrating interest in the students' ideas and promoting the joy of wanting to learn more about something. The teacher can model curiosity by being open to students' ideas even though they may seem to be "far out" and not related to the topic at hand. By not ignoring the teachable moment, teachers place value on the child's curiosity and begin the process of facilitating the child's own investigation into the topic. The teacher probes students' thinking by asking students to elaborate upon their ideas and helps students to formulate ways to investigate their questions. For students who have questions that may diverge from the main topic, the teacher provides an independent investigation form that articulates a plan for the inquiry. Questions for the students on the form include the following:

What are you curious about?
What do you already know?
What do you want to know?

There is also a list of methods of investigation such as Interview, Internet Search, Read a Book, Experiment, and so forth, that students can circle. The last section on the form asks students how they would like to share their findings with the other students. This approach again places value on students' inquiries and demonstrates the worthiness of pursuing their own questions. Oftentimes, the teacher brings students' ideas to the whole group for discussion.

## Promote and Facilitate Discussion

Discussion is one of the key features of project investigations, and it is important in all three phases of project work. Teachers who provide time for students to discuss and compare their ideas to those of others promote ways for students to further their inquiry and exploration. For example, in a discussion of how their ideas should be categorized, students argued over whether or not cranes or bulldozers should go into the same category:

*CM:* I think cranes should go with bulldozers because they are the same. They lift things.

*BG:* I disagree. Cranes are not the same as bulldozers because the crane has that thing that lifts that makes it different.

*CM:* They are the same, they do the same things. They just have different names.

*JJ:* Cranes knock down buildings and so do bulldozers. So they are the same.

*WJ:* Cranes help scoop up rocks.

*Jay:* Yeah. Bulldozers can't scoop, they are just for pushing things.

*CM:* Well, they are all machines that work on constructions.

*AH:* We could put tractors, machines, cranes all together. They are all machines.

*Teacher:* What do you think? AH is suggesting that all the machines go together in the same group.

*WJ:* No, I think the cranes should be separate from the others.

After arguing about whether or not cranes were the same as bulldozers, the teacher suggested that they survey students for their opinions. They graphed the results of their survey and brought it back to the group for more discussion.

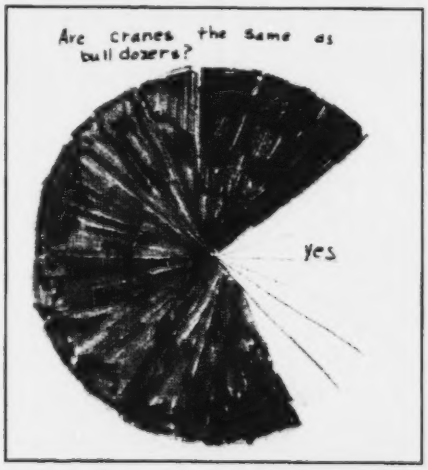


*Figure 1. Graph of the responses to the question, "Are cranes the same as bulldozers?"*

Facilitating discussion for young children can be rather tricky. Students often lose interest in what other children have to say. Keeping students focused on the discussion by eliciting their opinions and ideas makes for more lively and thoughtful discussions. Teachers can probe their thinking with questions such as these:

What do you think happened?
Would the same thing happen if we used other materials?
How do you explain this?

While discussing, children speak, listen, and respond to peers. By listening to the conversations during discussion, teachers can assess individual understandings and note misconceptions to prepare future contexts for learning. In the following discussion about frost, the teacher noted that many students had misconceptions:

*T:* What happens to get frost?

*JL:* I think it was raining and snowing last night. It was snowy cold last night. So rain and snow that is frozen makes frost.

*KH:* I agree.

*SG:* I agree.

*IK:* I agree.

*JL:* Frost means it's frozen.

*ErK:* I think it was raining and snowing. It was very cold last night because I was going outside and I felt some drops on my head. I was like, "Is it raining?" and then I started to see snow.

*ElK:* I think that it is just so cold that it just gets there.

*T:* How does the frost just get there?

*ElK:* In the summer, we saw a dead bunny and our dad touched him with a shovel, and it was dead because of the record. He was frozen. That's how it got frost.

*T:* The frost got there from the bunny?

*ElK:* No, the record.

*T:* Could you tell a little bit more about this record.

*ElK:* It means that it's a cold record. The weather's cold outside.



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*CAZ:* Like a weather record.

*DK:* Last year it set a record.

*EIK:* That's what I meant.

*T:* So you mean that last night it set a record and that's how the frost got on the grass?

The teacher returned to this conversation later in the project and reminded the students about what they discussed:

*T:* On October 15, we had a conversation about frost. On that day, the conversation sounded like this:

*ErK:* I think it was raining and snowing. It was very cold last night because I was going outside and I felt some drops on my head. I was like, "Is it raining?" and then I started to see snow.

*T:* Is that still your thinking about frost?

*ErK:* Yes.

*DK:* I think frost comes from grass. It's white stuff before it turns into frost.

*AS:* I think it's some ice.

*DK:* It's there in mornings. It's called dew.

*AS:* Not in the summer.

*MG:* I've heard of that.

*DK:* Frost is made out of dew.

*AL:* Frost melts in summer. Frost is dew.

*MG:* No, it's not.

*PF:* Hail storms are white. Maybe it hail stormed in the middle of the night. But I didn't hear any.

*LH:* When I was getting ready, frost was on the roof. It can get on cars, too.

*AL:* My mom said dew comes from out of the ground and frost comes from the sky.

*EIK:* Your mom's wrong.

*JW:* I've got an experiment that uses a magnifying glass. Maybe that would tell us. This is how I think frost forms. I think dew is drops of water that gets formed on grass. Dew freezes and frost is formed.

*T:* What are the conditions for dew? Where does dew come from?

*MG:* From the ground. Maybe the ground on the other side of the world, and it comes through the earth (I don't know how it gets past the hot lava), and then it comes out of the ground as dew and then frost.

New vocabulary is appearing in the conversation, as well as, for some children, a beginning understanding of dew and its relationship to frost. The conversations reinforce that not all children learn at the same rate. Understanding is not a whole class understanding, but, rather, the conversation documents where individuals are in "making sense" of their world.

Teachers listen to the conversations and ask clarifying questions to help students articulate their thinking during discussion. These questions may include:

What do you mean?
How did you do that?
Why do you say that?
How does that fit with what she just said?
I don't really get that, could you explain it another way?
Could you give an example?
How did you figure that out?
Can anyone help (name of child) figure out his/her problem?

Teachers help children think critically when revisiting key features of the conversation, reminding students what was said, and asking for their current thinking on the topic. Anderson (1996) contends that discussions promote further understanding:

> Teachers facilitate discussions where points of view are presented and debated by children to reach consensus on an answer. It is in the process of considering other children's solutions that they reach higher levels of understanding, learn more efficient procedures and/or clarify their thinking. (p. 37)

Duckworth (1996) also says, "To the extent that one carries on a conversation with a child as a way of trying to understand a child's understanding, the child's understanding increases "in the very process" (p. 96).

Discussions occur all throughout the phases of the project. In Phase 1, students brainstorm their previous experiences about the topic. They discuss, categorize, and label their ideas to form a topic web. Topic webs can be done several times during a project investigation—at the beginning, middle, and end. Critical thinking occurs during sorting and comparing of ideas during these discussions.

In Phase 2, students divide up into smaller study teams. Each team reports to the class in a large group meeting its observations and discoveries. This approach gives the investigators authentic opportunities to clarify their findings and speak before the group. It also gives the rest of the group the chance to ask questions, challenge assumptions, and express their own knowledge about the topic at hand.

## Hone Questioning Skills

The teacher may need to help young students distinguish between something they know and something they want to know. Although some young students can write their own questions, others may need to dictate their questions to a teacher. Teachers should keep a list of all of the students' questions throughout the project and encourage students to make predictions about the answers to their questions before pursuing the answers. In this way, teachers can note misconceptions and areas for growth. Predicting what the answer might be is another opportunity for critical thinking in project work. Teachers have to set the stage for valuing the process and not the right answer so students are willing to take that risk when predicting. Langer (1997) said:

> If we respect students' abilities to define their own experiences, to generate their own hypotheses, and to discover new ways of categorizing the world, we might not be so quick to evaluate the adequacy of their answers. We might, instead, begin listening to their questions. Out of the questions of students come some of the most creative ideas and discoveries. (p. 135)

Students find out answers to their questions by collecting data through firsthand fieldwork. Students observe, draw, and describe what they see. Student data collection includes asking the opinions of others and developing questionnaires. They tally, count, graph, and chart their findings. They also could experiment and interview experts. Answering questions leads to formulating more questions.

## Create Contexts for Experimentation and Representation

For young children, a project topic must be chosen that provides opportunities for hands-on inquiry experiences. Investigation and fieldwork are also key features of project work. Teachers must design and create the contexts for students to pursue data gathering. Here is an example of how the teacher takes the lead in suggesting that students may want to experiment to find out their answers. The students report their experiences upon their return from a nearby pond:

> *Konan:* I dropped 3 apples in the pond. 2 apples floated and 1 sank.
>
> *Teacher:* That's interesting. I wonder why.
>
> *Jeff:* A small apple is going to have less weight. It isn't as big so it would sink, and a big one has more place for the water to hold it up.
>
> *Teacher:* You may want to try to do an experiment in our classroom with water and try things to see if we can duplicate Konan's experiment and come up with a theory of why things float and sink.

The discussion continued with children sharing their theories of why one apple sank. Notice how the teacher again suggested students test their hypotheses by doing experiments, and a student modeled that behavior by suggesting another experiment:

> *Arnav:* Maybe the heavier the thing, the lighter... No. If the thing has much air, then it stays up. The thing that doesn't have air stays down.
>
> *Peter:* Deer like to eat apples. Maybe the deer took a bite out of the apple—a really small bite—and then the deer didn't like the apple and just left it. It was a really small bite, and Konan didn't notice it. And the bite filled up with water and sank.

*Konan:* I didn't see any bites.

*Teacher:* So we'll need to experiment with apples with and without holes.

*Deren:* You could do another experiment with apples the same size.

Throughout the project, the teacher focuses on how students approach and solve problems. Teachers should not emphasize whether students have right or wrong answers. This explicit interest in experimentation and problem solving empowers students to be young scientific investigators. Whole group discussions of students' experiments most always motivate other students to conduct more and varied experiments. The following example illustrates students sharing their findings about their shadow exploration:

*Kay:* Mine is short.

*Teacher:* Why do you think it's short?

*Kay:* Because I shone the flashlight on top of my person.

*Amy:* Hers is short because the light is far away.

*Andrea:* I think her shadow is short because the person she made is short.

*Teacher:* Sandy, do you have any explanation for why yours is a long shadow?

*Sandy:* I think the shadow is off the paper because the person I made is tall.

This conversation was documented, transcribed, and shared with the children to rethink or reaffirm their respective positions. After more opportunities for shadow observation, the conditions needed for a long shadow were again discussed.

*Kay:* The conditions needed for a long shadow are the light has to be far away.

*Kathy:* I agree, the sun is very far away from us.

*John:* I disagree.

The teacher brought a flashlight to the group and tested their theories. She asked, "What do you notice when the light is far above the model person?" Teachers should gently guide students' experiments by asking them to predict and hypothesize, getting them appropriate materials, and teaching them how to represent their findings and conclusions. Giving students time to design and build representations is another way to provide depth in project investigations.

Representation is also a key feature of project work. Students express their ways of knowing through representations. Representation may be explorative, integrative, emergent, creative, or playful for the students. Most always, creating representations are endeavors of problem solving. Students' favorite materials to build are "boxes and junk."

Teachers may enhance students' representations with digital photography so students can go back and look closely at what they are trying to reproduce or re-create. Students engage in higher-level thinking skills as they represent what they see. They evaluate materials, determine size relationships, design solutions to their problems, and demonstrate their understandings through their final product. Eisner (1997) said, "In short, the processes of thinking are engaged in the process of making, and the process of making requires the ability to see what is going on in order to make it better" (p. 350).

Students should be encouraged to make representations in all phases of project work. They may represent their memories, what they see in their fieldwork, and, finally, what they have come to understand.

## Use the Language of Thinking

The teachers' role is to provide contexts for intellectual engagement. Teachers may model language of thinking by using vocabulary such as the following:

I wonder
What if
I predict
My theory is
My hypothesis is

Tishman and Perkins (1997) labeled three categories of language related to thinking: claim to

knowledge, intellectual process, and kinds of ideas. The words associated with each are represented in the table below.

| | |
|---|---|
| Claim to Knowledge | conjecture, conclude, believe, confirm, doubt, know, suggest, speculate, suspect, and theorize |
| Intellectual Process | analyze, contemplate, discern, interpret, investigate, ponder, examine, and recollect |
| Kinds of Ideas or Outcomes | conclusion, hypothesis, option, solution, reason, claim, and theory |

Teachers may find these terms helpful as they model and encourage students to use them. Tishman and Perkins (1997) explained how using the language of thinking engages students in critical thinking:

> Frequent exposure to the language of argumentation, such terms as premise, reason, conclusion, evidence, theory, and hypothesis, draws learners into the values and commitments of critical analysis.... Using the language of thinking in the classroom helps develop learners' sensitivity to occasions for engaging in high-level thinking. Terms like claim, option, opinion, guess, and doubt alert learners to opportunities to do such things as probe an assumption, seek evidence, identify reasons, or look at a problem from a new point of view. (p. 372)

Throughout project work, teachers have the opportunity to engage students in the language of thinking. When they ask students to brainstorm their ideas, ponder new solutions, suggest new theories, make predictions, and examine their data, they are integrating the language of thinking into their daily routines. They are making students aware of how much thinking they are really doing!

Tishman and Perkins (1997) assert:

> When thinking-rich language pervades a learning environment—when it sees regular use by teachers and learners... it provides not only information but also an invitation to embrace and cultivate certain habits of the mind. (p. 372)

## Conclusion

To facilitate learning and to deepen the inquiry of project investigations, teachers must make decisions about concepts that are valuable and appropriate to teach. They must become informed about the topic by gathering resources, talking to experts, and collaborating with others to seek ideas for creating the contexts students need to pursue their questions. They must provide opportunities for students to revisit their ideas and assumptions and develop activities to assess and reassess students' knowledge, skills, and dispositions. Teachers guide students to re-create and reflect upon their experiences, and help students to find meaningful ways to represent what they have learned. Teaching strategies that enhance the depth of inquiry include modeling curiosity, promoting discussion, honing students' questioning skills, creating contexts for experimentation and representation, and using the language of thinking. Teachers who want to deepen project work learn to probe, provoke, guide, provide, and assist students all along the way.

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# Meeting Individual Educational Plans Using the Project Approach

Stacie DeVries

## Introduction

Is the Project Approach appropriate for all children, including those with special needs? Of course! But some educators may be hesitant to use the Project Approach to meet individual educational plans (IEPs) because it seems too difficult to incorporate a child's specific goals with a project topic. Some teachers become comfortable meeting IEP goals by planning more teacher-directed activities. Other teachers may feel a child's developmental or communication delays inhibit his or her ability to be interested, to learn from the experience, or to achieve project goals. A child with special needs may require more assistance to participate in a project activity—for example, holding the paintbrush to make strokes on a representation of a refrigerator seen at the pizza parlor. Some classrooms have limited numbers of adults to spend extra time with a child with special needs; however, if they rethink their approach to meeting IEP goals, educators can accommodate children's individual needs using the Project Approach.

According to Rebecca Edmiaston (1998), the Project Approach is well suited to meeting the needs of all young children, including those with special needs. After studying inclusive environments, Edmiaston provides five reasons in support of using the Project Approach with children who have special needs:

1. Projects are collaborative—children and teachers work collaboratively, and all children contribute in their own way.
2. Projects are based on children's interests—learning experiences can be shaped to meet all the children's needs.
3. Projects include a variety of activities and experiences. Individual abilities are taken into consideration, and IEPs can be integrated.
4. Small groups take on much of the work during a project, making it easier to meet individual needs and include children with special needs.
5. Documentation of the project emphasizes the learning experiences and strengths of the children.

At St. Ambrose University Children's Campus (SAUCC), the Project Approach is used to meet curriculum objectives and goals for individual educational plans involving children with special needs. The center serves as a least restrictive environment for families in a variety of school districts. The Bluebird classroom serves children 3, 4, and 5 years old. Children with individual educational plans are involved in learning experiences, and documentation supports growth and achievement for specific goals and benchmarks. If a child's IEP goals and benchmarks are supported with documentation, school districts will see the learning that is occurring as a result of firsthand learning experiences such as those afforded by the Project Approach. Two families have given permission to use examples of their children's IEP benchmarks and documentation to help explain how using the Project Approach can meet children's individual needs.

## Jenna

Jenna is a vibrant, 4.5-year-old young child with a medical diagnosis of cerebral palsy (CP). Her CP affects her speech and gross and fine motor movements. Jenna's IEP focuses on goals for school readiness, language, and motor development. When Jenna was about 2.5 years old, Lori,

Jenna's mother, began noticing a gap in the interactions between Jenna and her peers. She didn't want Jenna to be an observer of classroom life but rather an active participant. Jenna was enrolled in our center just before her third birthday. Lori writes,

> I saw an immediate difference in the environment. The children, who are accustomed to seeing special needs peers, immediately warmed to Jenna and included her in their play. The gap that I saw was immediately gone! ... the Project Approach to learning naturally includes all the kids and their perspectives. It allows the learning to come from them instead of solely from the teacher. Jenna's curiosity has been stimulated, and I see that transfer to our home. Even with speech, I see Jenna's eyes sparkle with curiosity as the group explores a project. I observe her listening and thinking intently and asking questions and carrying out some action related to the project. She is able to achieve, with whatever modifications are necessary, what her peers are able to achieve. Her self-esteem has improved, her social interactions have improved, and she has made tremendous progress in meeting her developmental milestones. Because of this type of environment and the Project Approach, I see Jenna blossoming and being involved in learning and life, which is the ultimate goal.

Jenna actively explored the guitar, cello, and bass during the Stringed Instrument Project. She used her communication device to name the instruments and request specific songs. Jenna investigated all instruments by strumming or picking the strings and participated in a variety of small group curriculum activities. Following are some examples of her learning experiences and documentation to support IEP benchmark achievements.

Throughout the entire project, the children were exposed to a variety of guitar shapes and sizes. The guitars provided ample opportunities for comparisons of similarities and differences, as well as music-making experiences.

Jenna held the pick of the guitar with her finger and thumb (Figure 1). She requested to play "Twinkle, Twinkle Little Star" by opening and closing her hands, like a twinkling star. She used the pick on the strings while Stacie sang. In the language of her IEP, Jenna strengthened her abilities to use a pincer grasp to hold a tiny object.

*Figure 1. Jenna explored a guitar during the Stringed Instrument Project.*

A rolling and building game was played to strengthen Jenna's mathematical thinking skills. After rolling the die, the dots were counted, and corresponding blocks were stacked. The stack of blocks was compared to the size of the guitar (see Figure 2).

*Figure 2. Jenna pointed to dots on a die.*

Jenna pointed to the dots on the die. She placed one block on top of the die and two more around the die to equal three, the same number on the die. Jenna strengthened the following IEP benchmarks: understanding quantity concepts 1 through 5 and participating in an adult-led activity.

During a field site visit to seek answers to questions, children played the cello and bass. Some children also sketched instruments.

Jenna made vertical strokes on her paper (Figure 3). She pointed to the part of the instrument she sketched. She made the strings on the bass. She met the following IEP benchmark: attempting vertical images on paper with minimal assistance.

*Figure 3. Jenna sketched the strings on a bass.*

## Nathan

Nathan is a 5.2-year-old, energetic boy who was diagnosed with a congenital heart defect in the first days of his life. Nathan has a chromosomal abnormality and is diagnosed with severe oral apraxia. Nathan's IEP focuses on goals for school readiness, language, and motor development. Karla, Nathan's mother, writes,

> The use of projects has allowed Nathan to demonstrate initiation as he becomes interested and excited about the topic. Nathan initiated constructing a guitar when musical instruments were available to explore. He also constructed a dog kennel when pets were the project topic.

Our child-led environment and the Project Approach have strengthened Nathan's attention span, as well as his communication and socialization skills.

During "Doctor Tools/Casts," Nathan (4.0 years) participated in investigating a variety of doctor tools. He learned new sign language to identify the tools and manipulated them to figure out how they are used by doctors. Nathan also investigated the texture of casts and how they are made. Following are some examples of his learning experiences and documentation to support IEP benchmark achievements.

Dramatic play was an important avenue for learning and an effective technique to include all children in our classroom, especially those who continued to build their language skills. Props allowed us to gather knowledge prior to our field site visit and after our field site visit.

*Figure 4. Nathan participated in investigating a variety of tools used by doctors.*

Nathan imitated, using sign language, "Look, ear," to tell a friend to look in his ear (Figure 4). For Nathan's IEP, he strengthened his ability to take turns with a peer and imitated sign language, increasing his communication skills.

After a visitor shared his experience with a broken finger and a new cast, children made representations of casts.

Nathan created a cast out of Model Magic dough (Figure 5). He pressed the dough on his arm and hand. He learned the sign "band aid" for the word cast. During this experience, he met the following individual benchmarks: handling materials appropriately and poking, rolling, and squeezing a dough art medium.

*Figure 5. Nathan created a cast out of Model Magic dough.*

During Phase 2, the children shared knowledge and asked questions regarding several tools used by doctors. Nathan manipulated the stethoscope and tongue depressor (Figures 6 & 7).

Nathan put the stethoscope on and listened to my heart. He gave me the stethoscope and lifted his shirt, communicating that he wanted me to listen to his heart. He also demonstrated how to use the tongue depressor. Nathan met the following individual goals: waiting for and taking turns, handling materials appropriately, and expressing his needs.

## Conclusion

Is the Project Approach appropriate for all children, including those with special needs? Yes. Jenna and Nathan's experiences with project work have proven to be successful in meeting their individual educational plan goals. Both children have participated in all projects since their arrival at SAUCC, with their level of participation varying. Jenna and Nathan have both explored independently, as well as with assistance. IEP goals were incorporated with project activities on lesson plans, and several goals were strengthened and achieved. Learning experiences and documentation created evidence needed to support the individual educational plans for children with special needs. The Project Approach can meet the needs of all young children, including those children with special needs.

*Figure 6. Nathan put on the stethoscope.*

*Figure 7. Nathan used a tongue depressor.*

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*Section 3*

# Project Summaries

## The Veterinarian Project

A Project by 3-, 4-, 5-, and 6-Year-Old Children
at Donald C. Parker Early Education Center, Machesney Park, Illinois
Length of Project: 2 months
**Teacher: Susan Andrews**

### Phase One

*Beginning the Project*

This project started when we got a new classroom pet—"Prince Charming" the water frog! I shared a story with the class about how our new friend had recently been sick. He had eaten a bunch of aquarium rocks and had a belly like a beanbag. I had to call the veterinarian and find out how to save our new friend. Many children shared stories about their experiences with their own pets and veterinarians. I could see the high interest in this topic, and the Veterinarian Project began. As a class, we webbed, read many books about pets and vets, and even created a veterinarian office in our dramatic play area. The level of play in this area increased as the weeks went on. The children were ready for a more in-depth investigation.

### Phase Two

*Developing the Project*

The children were ready to extend and deepen their knowledge about veterinarians. Field visits were arranged to allow the children to experience real objects, processes, and roles. The children who came in the morning were able to visit a "Mobile Veterinarian Practice," and the children who came in the afternoon visited "Hillcrest Animal Hospital." On the actual field visits, the children were divided into small interest groups. It was their responsibility to interview the experts, record answers to their questions, and to sketch tools and various parts of the clinics. Parents were used on each field visit to assist the children in this ongoing investigation.

### Phase Three

*Concluding the Project*

The children were anxious to return to our room and share all of their new knowledge. Each group decided on a way to represent what they had learned. Several groups decided to make books, other groups chose to sketch or paint. One group made a movie documentary about their visit to the vet. Each group had the opportunity to present their information to all classmates and parents. Dramatic play continued in our classroom "Veterinarian Office" until the end of our school year.



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| Comments | I have been using the Project Approach in my classroom for several years, and I felt that this particular project was one of the best. The topic was very meaningful to the students. They had lots of background information, and I feel this information helped fuel the project's longevity. The interest level of the children was high and remained that way throughout the entire project. I received positive feedback from many parents. This project confirmed that small group work around a purposeful topic creates many opportunities for children to pay attention, practice skills of communication, and reflect about themselves and others. My active presence – through observation, questioning, and documentation—helped the children see that I value their thinking and trust and believe in them. |
|---|---|

## Exploring Butterflies

A Project by 2-Year-Old Children
at Illinois State University Child Care Center, Normal, Illinois
Length of Project: 7 weeks
**Teacher: Scott Brouette**

### Phase One

*Beginning the Project*

Every time we went for a walk, we would see many, many butterflies! The children talked about the butterflies and tried to catch them. One day, we caught a bee, a large crane fly, and a Common Sulfur butterfly. The children focused on the butterfly. They discussed butterflies that they had observed at home as well as at school. A few days into our discussion, we constructed an idea web. As we made the web, we discovered that most of the children's prior knowledge involved parts of a butterfly. This aspect of butterflies became the focus of our investigation. Usually when I am working with 2-year-olds, my expectations at the beginning of the year are simple; however, this group of 2-year-olds dove right into project work and proved to me that they were eager for more information.

### Phase Two

*Developing the Project*

The main focus of our investigation was butterfly anatomy. The butterfly bodies and movements fascinated the children. We were lucky to have a butterfly garden right on the school grounds, which we visited often. In order to observe butterflies more closely, we constructed a habitat in our classroom, using mosquito netting hung from the ceiling.

We used factual books as well as the Internet to gather information. The butterfly garden provided a great place for observing butterfly behavior. The children made many sketches of butterflies out in the garden as well as in our classroom. The children also designed their own butterfly wings to become butterflies. We also pretended to be butterflies by using straws to drink like butterflies do. Through our investigation, the children strengthened their knowledge of butterflies as well as dispelled some of the misinformation they had. The children discovered that butterflies do not wear shoes or shirts, which some believed at the start of the project. Parents were encouraged to observe butterflies at home with their children. They would share many stories of butterfly encounters with the group.

### Phase Three

*Concluding the Project*

The children voted to write and illustrate a book to conclude our project. They chose to include many of the facts we discovered through our investigations. Each child recited a page and illustrated that particular fact. The book took several days to finish, and the children were excited to see it all put together. Each family was allowed to check out the book and take it home to share with the whole family. The children were truly excited to share what they had learned. We all acquired new knowledge of butterfly behavior, anatomy, and environments.



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| Comments | I was amazed that the children had so much prior knowledge about butterflies. It was exciting to see them apply newly acquired information to prior knowledge. Each day, the children's interest showed that the study of butterflies was a valid topic. The children came in everyday and showed their parents our butterflies and explained what they were doing. One child who spoke little English was a main contributor to discussions at the end. If I did this project again, we would start earlier so we would have a longer period to observe butterflies. Our new project is investigating plant growth. One of the children's first thoughts on plants was, "Butterflies eat on plants!" |
|---|---|

## The Egg Project

A Project by 4-Year-Old Children
at Ysleta Pre-K Center, El Paso, Texas
Length of Project: 6 weeks
**Teacher: Debbie De Anda**

### Phase One

*Beginning the Project*

We were trying to get a project started about supermarkets when we decided to take a vote on which was our favorite food. Macaroni and cheese and pancakes were the top choices. I then planned to make pancakes for our Wednesday Cooking Experience. As I prepared the Wednesday lesson, I gathered the ingredients and kitchen tools along with some read-alouds. Eric Carle's *Pancakes, Pancakes* has always been a favorite of mine, so I chose this book. Then Wednesday's lesson began. I have a couple of students that lead the rest in many areas and speak the loudest during instruction time. We try not to ignore them because they are our windows to these 4-year-old minds. As I read *Pancakes, Pancakes*, we came to the part where the little boy needs to get eggs for his mom to make the homemade pancakes. Living on a farm, he gets the eggs from the hen. As soon as I read that part, Noah shouted, "Hey, he can't take that egg from there!" "Of course he can," Michael and I replied. "No, you get eggs from the store, not from chickens." Oh, what a connection to the supermarket, I first thought. But as I looked at Mrs. Lemos, we had the same look. We knew we had to teach about eggs and where they come from—our project began.

### Phase Two

*Developing the Project*

We then taught ourselves about eggs and chickens. Our school library had many books on birds, eggs, and related topics. Mrs. Lemos and I researched and then knew we could do this project. As I mentioned this project to different people on campus, we found that we had a school incubator, warmer, and feeder. I also wrote to our parents to see if they could possibly be our experts on eggs. As it turned out, Michael and his family raise chickens at home. His father brought us some eggs and answered the children's questions. We watched the incubator carefully and monitored what happened. The children also researched and found many interesting facts through our books and the Internet. However, the most valuable learning experience was observing firsthand the live chicks in our classroom who arrived after 21 days. The children watched the chicks eat and walk and make sounds. They drew pictures of the chicks, and we spent lots of time discussing what we observed about these creatures.

### Phase Three

*Concluding the Project*

As we observed the chickens, we drew pictures of the changes in the chicks. After the chickens began to grow, we returned them to Michael's family. We shared the information we had learned by writing stories and making a book about the chickens. We wrote a thank-you note to Michael's family.



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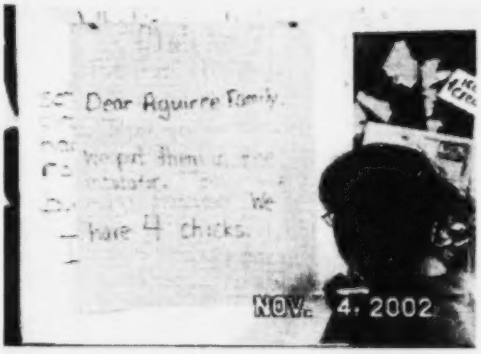
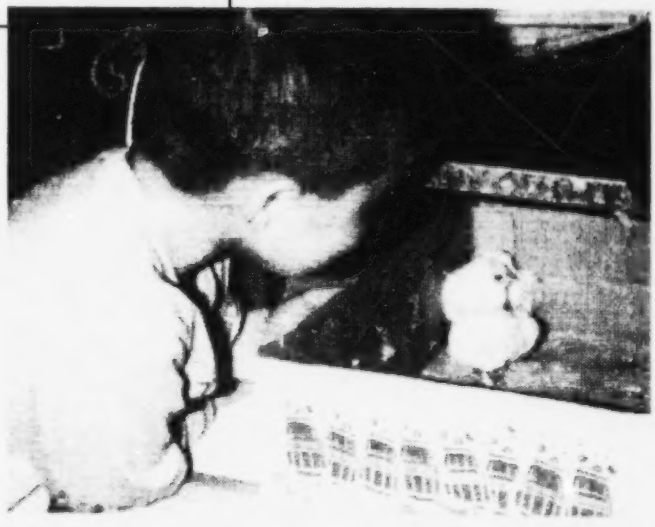
| Comments | This project was meaningful for our children because it began with intense interest and a need to find out whether or not their thinking about eggs was correct. Our children learned lots of new vocabulary words, research skills, and how to compare and contrast. They also discovered that little chicks can be extremely cute and fun to watch. As teachers, however, we also remembered how much fun it was to be a 4-year-old! |
|---|---|



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## The Stringed Instrument Project

A Project by 3- through 5-Year-Old Children
at St. Ambrose University Children's Campus, Davenport, Iowa
Length of Project: 8 weeks
**Teachers: Stacie DeVries & Karen Blend**

### Phase One

*Beginning the Project*

After two children spontaneously created a guitar, the teachers brought in a small guitar, ukulele, and autoharp to investigate. The children continually returned to the instruments to explore the sounds, hold them in various ways, and notice the similarities and differences through observation. A parent visited to share his guitar. He encouraged children to participate by singing and strumming his guitar. After his visit, children began sketching the guitar and noticing the parts. Others constructed guitars out of wood, nails, and wire. Questions began to emerge: What are the parts? How do the buttons make it louder/softer? What do the buttons on the guitar do? To introduce another stringed instrument, a student employee brought her cello. The children immediately thought it was a violin or guitar! After hearing the cello, some noticed the difference in sound. Other questions emerged: What is rosin? What does it mean to pluck? What are the hand strings called where you put your fingers?

### Phase Two

*Developing the Project*

We visited Galvin Fine Arts Center and met with the band director. Children asked their questions about the guitar and cello and were introduced to a new stringed instrument—the bass. Children made comments and asked several spontaneous questions about the bass. Answers to questions were recorded on clipboards. Some children chose to sketch, while others explored the instruments by touching them.

Back in the classroom, we created a web about what the children knew. New construction materials were provided, and children created guitars from rubber bands, Styrofoam, tubes, and lids. Some children painted representations of guitars and made sketches of the cello and bass.

### Phase Three

*Concluding the Project*

We documented the project with photographs and sketches. Children selected a piece of documentation to share during open house. They shared information about the photograph or sketch pertaining to the stringed instrument and prepared it for display. After open house, a display was created outside our classroom door. A child helped dictate the sign, "It's about guitars, cellos, and bass." If onlookers had questions, they were encouraged to come into our classroom and ask the stringed instrument experts! The children strengthened their mathematical skills by comparing sounds and sizes. All children used their senses to explore. The dispositions to be curious and to persevere were nurtured and strengthened.



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| Comments | Throughout the project, the children were engrossed in their exploration and representation of instruments. The guitar was the instrument of choice for most children. Phase 1 was longer than usual, but we had our best representations during this phase using a variety of materials. Phase 2 came and went quickly! Representation was difficult during this phase, maybe because children were tired of representing the same thing. Phase 3 really encouraged each child to reflect on his learning. Next time, I intend to think more about the difference between Phase 1 and Phase 2. I will also try to encourage more collaborative representations. |
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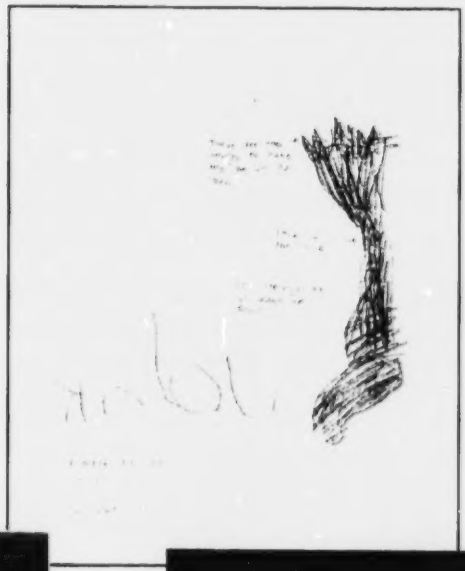

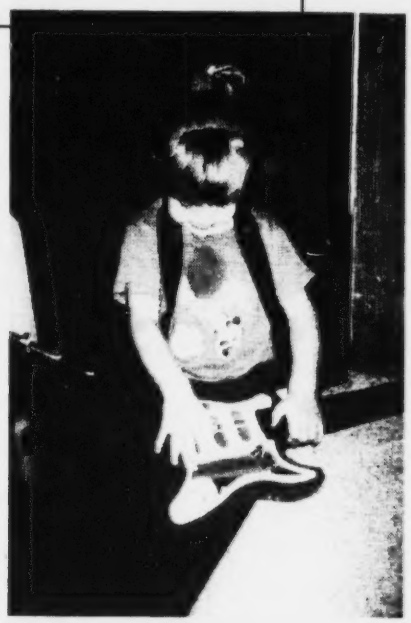

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## Dinosaur Models

A Project by 3- through 4-Year-Old Children
at Preschool for the Arts, Madison, Wisconsin
Length of Project: Not yet completed
**Teachers: Nancy Donahue & Joan Kerman**

### Phase One

*Beginning the Project*

Our investigation began in mid-January after a few children brought toy dinosaurs and dinosaur books to school. We were hesitant to explore this interest for two reasons: (1) we saw a potential for aggressive play in a classroom with a large ratio of "active" boys and (2) dinosaurs are not a part of our everyday experience in the real world. However, interest continued to grow as evidenced by the children's choosing activities with dinosaurs and books brought from home on a daily basis. They also made dinosaurs the subject of artwork and searched for dinosaur fossils on our playground. It seemed as though we would be ignoring what was a very strong interest if we did not explore the topic.

### Phase Two

*Developing the Project*

We began by collecting some toy dinosaurs and putting them in the classroom to see how the children used them. Over the next week or so, we put some dinosaur fact books and storybooks in the classroom. The children frequently asked to have them read to them and chose them to look at during their rest time. We also added some natural materials—large pieces of tree bark, rocks, and artificial greenery to the block area. The children quickly combined these materials with the toy dinosaurs. This activity led to the construction of a dinosaur habitat that was large enough for a couple of children to sit in while playing with dinosaurs. We also asked the children what they knew about dinosaurs and what they wondered about them during the first week. One child wanted to know how they lived, and another asked what they did all day. So we focused on dinosaur "life"—dinosaur families, specifically nesting habits, eggs and development, and where they lived (habitats). Many of the books and videos we have looked at show volcanoes, so we took a little side trip to explore volcanoes, and we made a volcano model out of papier-mâché. We also talked about paleontology and pretended to be paleontologists by finding fossils and bones (processed chicken bones and plastic T-Rex model bones) in sand and dirt and using tools to clean them. When we were well into the project, a guest speaker (who spends his summer at dinosaur digs) came to our classroom to share experiences, present a slide show, and show us fossils and some T-Rex bones he had found. We also went on a field trip to the geology museum on the University of Wisconsin at Madison campus.

### Phase Three

*Concluding the Project*

Over a four-week period, the children made a large papier-mâché dinosaur model with our art specialist in the art studio. Because it was too big to put in our classroom, we decided to put it out in the piazza and make a museum exhibit out of it. The children reflected on the trip to the geology museum and other museum experiences to help them design and build their dinosaur exhibit. They also made a book that contained drawings and information about dinosaurs (so we revisited what we know about dinosaurs). The project culminated with the unveiling of our exhibit and a tea party in the piazza.



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| Comments | At the time of writing, this project has not been completed. Reflecting back on what we have done so far, we would have liked to have allowed the children to spend more time with each other theorizing about dinosaurs before we provided information through books and videos. We did spend some time talking about theories about dinosaur extinction, but two of the children already knew about the theory of a meteor hitting earth and insisted that this is what happened to them. Although we were initially hesitant to go into this topic, it has held the children's interest, and they have taken their curiosity and enthusiasm home. At the beginning of the project, a student had said that she hated dinosaurs and did not want to talk about them. A month into the project, she drew a picture and wrote "love dinosaurs" on it. Even though dinosaurs are not a part of their everyday life in the real world, they are definitely a big part of many young children's lives. |
|---|---|

## The Bird Project

A Project by 5- and 6-Year-Old Kindergarten Children
at Towne Meadow Elementary School, Carmel, Indiana
Length of Project: 5 weeks
**Teacher: Candy Ganzel**

### Phase One

*Beginning the Project*

The topic of our first project of the school year was birds. I chose the topic because, as part of a Lilly Endowment Grant I had won, I had visited Waterton/Glacier National Parks and developed an interest in birds and photographing them. I was required as part of the grant to incorporate what I had learned into my classroom. I brought my scrapbooks and photo albums into the classroom for the children to view. They were excited at the many bird photos I had taken, and they spent much time looking at them. We then had many discussions during morning circle about what the children already knew about birds and their experiences with birds. We also took many walks around our school to see what birds we could find and identify. During this phase of the project, we also made many drawings of what the children thought they knew about birds and what they thought birds looked like. After many days of drawing and discussions, we made our web, and the children divided themselves into groups by interest.

### Phase Two

*Developing the Project*

As the children wrote their questions and after more discussions, they started bringing in all types of objects associated with birds—books, binoculars (for bird watching), calendars, statues, and many, many nests. This bird center turned into a wonderful learning center. The children worked in their small group to write questions (at their developmental level). We decided to do our fieldwork at our school by bird watching and having an expert come to visit. We were very lucky to have a park ranger from Glacier National Park, who lives in Indianapolis during her off-season, as our expert. Her specialty was birds! During her visit to our classroom, she shared many visuals along with answering all of our questions. The children were excited to see her in her uniform. Besides answering our questions, she also dispelled some of the myths. The children had thought for sure we had an eagle that flew over us every time we went bird watching. They quickly learned it was a hawk. After all of our investigation, the children came up with many ways to represent what they had learned. Some used clay, some made books, some made dioramas, and some made posters. Our projects were displayed in the classroom and hallway for all to see.

### Phase Three

*Concluding the Project*

The groups of children made presentations to the rest of the class about their part of the project, explaining questions they had asked and what they had learned. After the class presentations, the children invited their families to school to view their projects. We set up a museum-style event. The children were the tour guides and guided their families through the project. The parents had a brochure (made by me) that helped them know what questions to ask to gain the most knowledge from their child's experience. This brochure also gave the parents a list of standards covered during this project.



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| Comments | It was very exciting to see the children want to know more and more about the birds around them. It was also fun for me as a teacher to have a huge display of bird objects spontaneously develop in the classroom. The children really spent a lot of time looking at books, photos, feathers, and nests. They also spent time writing stories about birds. This project really carried over into everything the children did in the classroom. I saw a lot of their interest in birds show up in their daily journal writing. As a result of this project, the children quickly learned how to question, research, wonder, and work cooperatively in small groups. We also covered many of our Indiana State Standards. It is nice to be able to share with administration how many of the state standards can be met through doing projects! |
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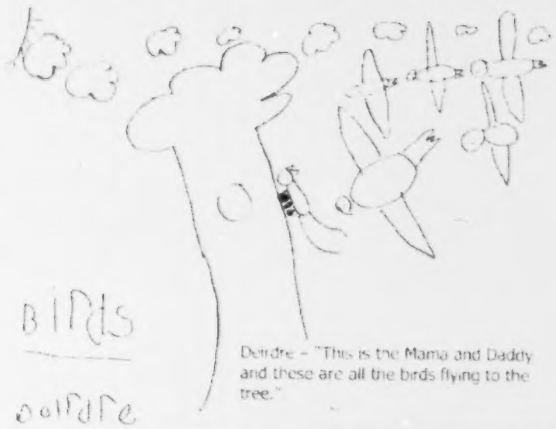

Deirdre – "This is the Mama and Daddy and these are all the birds flying to the tree."

## Our Snake Project

A Project by 3-, 4-, and 5-Year-Old Children (multi-age class)
at Timothy Christian Preschool, Elmhurst, Illinois
Length of Project: 5 weeks
**Teachers: Ruth Harkema & Deb Lanenga**

### Phase One

*Beginning the Project*

Four-year-old Max was fascinated by a snake during our fall field trip and suggested we study snakes. We previewed Brookfield Zoo's reptile house, gathered books from libraries and bookstores, discovered a pet store willing to let us borrow a desert king snake, and asked children to represent snakes with paint, colored markers, or Model Magic™. They wanted to find out how snakes move and climb without falling, how they use their tongues, whether all snakes are poisonous, and what they eat. We hoped the children would develop a sense of wonder about a misunderstood member of God's creation that would dispel their fear and create a desire to touch a snake.

### Phase Two

*Developing the Project*

We showed clips from the video *The Ultimate Guide: Snakes*. Children checked out snake books, book-marking favorite information and pictures with their parents to share with the class. They touched snake skins and skeletons brought by our high school biology teacher, asked him questions, observed and touched the desert king snake, and, with parent volunteers, sketched snakes and looked for answers to questions at Brookfield Zoo. After comparing their zoo sketches to photographs of their snakes, the children made pen and liquid watercolor drawings to illustrate their dictated stories in our *Snake Book*—even Hope who came from China with no English 20 months before this project. She started by painting a black-line snake and, when asked what she wanted to learn at the zoo, announced to the class, "**Do not open cage.**" At the end, after her hands had reached out to touch four different snakes, she painted a complicated scale-covered snake and sounded out and wrote her own story words. During their research, children discovered that a reticulated python could be 33 feet long or as long as a school bus, so they measured a 33-foot length of paper, painted a python, and marched it out to the parking lot where 24 proud hands stretched it alongside bus #20. To complete our study, the children made 3D snakes using tubing, piping, wood, or Model Magic™, and they wrote snake party invitations to their families.

### Phase Three

*Concluding the Project*

Our celebration began with a Snake Ram-Sam-Sam nonsense rhyme. Then each child took the stage and with a paper tube "microphone" told what he or she learned about snakes. Parents created a caring celebration as they clapped equally loud and long for each child. Children showed their parents their snakes, photographs of themselves at work, our almost-school-bus-length python; ate snake cookies; and took home copies of our *Snake Book*.



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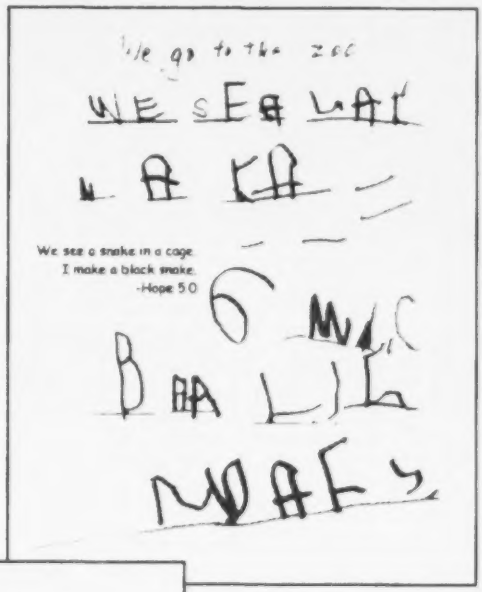
## Comments

We were pleased with the children's enthusiasm during the project and the quality of the work, but we underestimated the power of the project for families until parent reflection questionnaires were returned. Parents appreciated that their children were allowed to study what interested them. They listed as benefits of this long-term study their children's excitement, depth of focus, increased love of learning, eagerness to do research, and their competent sharing of what they had learned. A year later, parents are reporting that their children still ask to check out snake books, want to report findings to their former classmates, and, when visiting the zoo, ask to visit the reptile house first.



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## The Clothing Project: Where Do We Get Our Clothes From?

A Project by 4-Year-Old Children (preschool)
at Freeburg Early Childhood Program, Cedar Falls, Iowa
Length of Project: 4 weeks
**Teachers: Marsha Gwen Harmon & Julie Schutte**

### Phase One

*Beginning the Project*

A visit from local firefighters spurred Jamell to ask, "Who invented firefighters' uniforms?" As his classmates responded to this question, Shamia inquired, "Where do we get our clothes from?" A lively discussion ensued that included responses such as *the store* and *sheep*. Afterwards, Gwen (classroom teacher) and Julie (student teacher) brainstormed how the children could investigate Shamia's question. They started by webbing about sheep and their role in the making of clothing. We read *Charlie Needs a Cloak* by Tomie DePaola and set out other informational books.

### Phase Two

*Developing the Project*

Children read about sheep, recorded their findings, and examined wool clothing. Some children were interested in sheep and developed new questions such as, "Do sheep get milk from a bottle?" Others washed a wool sweater to see if wool really shrinks and also learned about color fading. An expert spinner visited and expanded children's knowledge of different types of materials and modeled spinning on two different types of spinning wheels. Other experts demonstrated using a loom, knitting, and crocheting.

The children encountered new vocabulary. For example, *dye* was a confusing word. They used a *die* in playing classroom games, had some understanding of the word *die* as in *death*, but they really didn't understand *dye*. Teachers provided opportunities for children to dye using beet juice, Kool Aid, and special watercolors. Children's understandings were documented through time-1 and time-2 drawings, videotapes, photos, and class discussions.

Children's interest in materials changed to sewing when the family worker brought her sewing machine to class. With assistance, children cut out fabric using simple patterns, and they sewed tops and pants with simple straight seams. They were so excited about their outfits that they would not take them off at the end of the day.

### Phase Three

*Concluding the Project*

This project did not really conclude; it just changed directions. Presently, the preschoolers are filling clothing orders for the newly established department store in the kindergarten class. The Clothing Project was a rich experience that allowed children to gain a better understanding of their world and teachers to integrate meaningful experiences across all curriculum domains. For example, children developed literacy skills by constructing a vocabulary glossary and becoming familiar with informational books. Children extended mathematics knowledge by examining and designing patterns through weaving, sewing, and art activities. Using simple tools and carrying out experiments with dyes developed scientific thinking. Cutting fabric, weaving paper, and threading plastic needles honed fine-motor skills. Throughout all of these experiences, children shared ideas and exchanged perspectives.



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| Comments | The Clothing Project was a wonderful experience for the children and us. The topic, which genuinely emerged from the children, was meaningful and relevant to their daily lives. It provided an opportunity for children to actively explore a variety of questions and participate at different levels of involvement. Equally as important, this project allowed us to implement integrated curriculum in meaningful and purposeful ways. We found the most difficult aspects of project work to be allowing children to join us as co-constructors in planning curriculum and posing questions that challenged children's thinking. |
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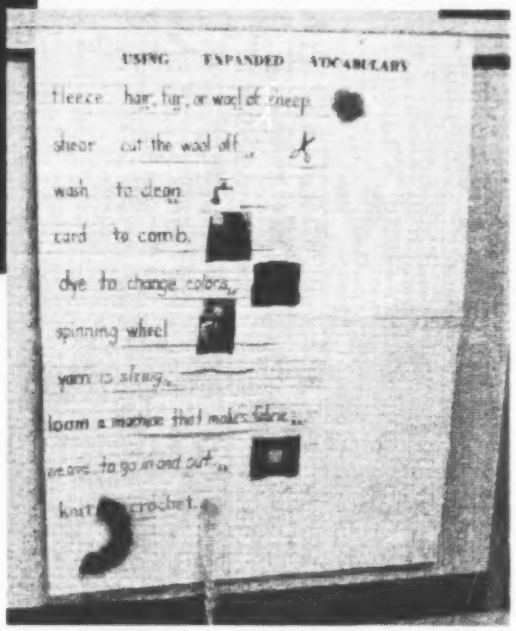
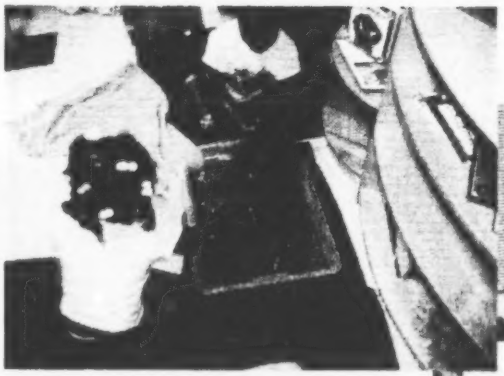

USING EXPANDED VOCABULARY
fleece hair, fur, or wool of sheep
shear cut the wool off
wash to clean
card to comb
dye to change colors
spinning wheel
yarn to string
loom a machine that makes fabric
weave to go in and out
knit crochet



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## Who Measures What in Our Neighborhood?

A Project by a Kindergarten/First-Grade Class
at University Primary School, Champaign, Illinois
Length of Project: One semester
**Teachers: Nancy Hertzog & Marjorie Klein**

### Phase One

*Beginning the Project*

The head teacher began the project by sharing a story about the wall in her house where family heights were recorded. Students shared many stories about being measured by a doctor and measuring to build things. They represented their memories with drawings, surveys, Kid Pix graphics, and models of measuring tools made of clay, Legos, blocks, rods, or boxes and junk. The teacher and class brainstormed words associated with measurement and categorized them to form a web. Students had questions about the ideas they generated. "What tools are used for measuring?" "How do measuring tools work?" "What things get measured?" "How do you measure with measuring tools?" "Why do we measure?" "Who measures what in our neighborhood?" Their questions guided their investigations.

### Phase Two

*Developing the Project*

The students engaged in field studies and asked experts to answer their questions. Field studies included several neighboring sites: Children's Research Center, Illini Credit Union, ceramics studio, Fire Service Institute, State Water Survey, and a sheep farm. Visitors included a mechanical engineer, a food inspector, animal researcher, a potter, a pilot, a seamstress, and a father who brought his car to show the children what you measure in a car.

### Phase Three

*Concluding the Project*

During Phase 3, students reviewed and reflected upon their work with the goal of communicating what they had learned. To conclude the project, students brainstormed and summarized what they had learned about *Who Measures What in Our Neighborhood?* Students also discussed how they would tell the story of what they learned about *Who Measures What in Our Neighborhood?* Students worked in small and large groups sharing comments, listening, and discussing the products that they were constructing for the open house. They chose a number of ways to share their findings. Some groups finished their representations that told about their fieldwork, while others worked on a fabric quilt, murals depicting the concepts learned, stories, homophones, poems, and PowerPoint presentations.



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| Comments | The students' reflections demonstrated that they now have a better understanding of how measurement is a part of everyday life. The vocabulary that they used in their second web showed that they increased their knowledge of types of measuring tools. This vocabulary extended beyond the typical kindergarten and first-grade mathematics curriculum. By using graphic organizers to analyze and draw conclusions from their data, students met and often exceeded Illinois Learning Standards for kindergarten and first grade. The students gained an awareness that measurement is a part of everyday life. In addition to rulers, scales, and tape measures, students learned about specific types of scales, including spring scales and balance scales. Students became more comfortable using measuring tools and measuring for their own purposes. |
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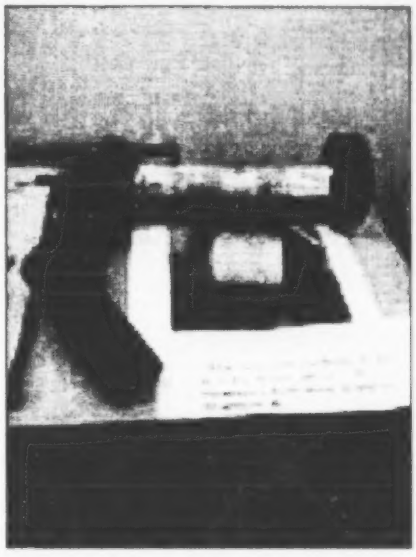
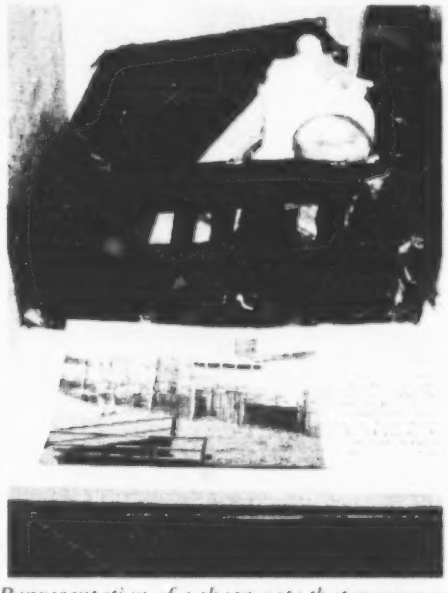
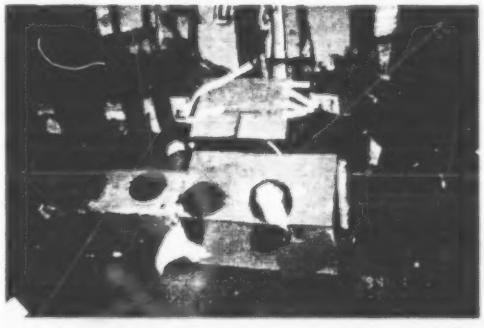


*Representation of a coil machine that measures the depth of water.*



*Representation of a sheep gate that measures the size of sheep.*



*A dump truck in progress.*

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## Fashions, Beauty, and Barber Shop

A Project by 5- and 6-Year-Old Kindergarten Children
at Freeburg Early Childhood Program, Cedar Falls, Iowa
Length of Project: 4 weeks
**Teachers: Sherice Hetrick-Ortman & Shirley Bruce**

### Phase One

*Beginning the Project*

Brightly colored scarves had been donated to the classroom and placed in the pretend play area. Faith was inspired by the fabric and began draping the scarves over furniture, creating an attractive cove for artistic expression. La'tece became interested in what Faith was doing. Faith had an idea. "Let's make a beauty shop." "Yeah!" said La'tece. "That's a good idea." The excitement generated by Faith and La'tece caught the attention of two more girls in the classroom. All four girls began moving furniture around in the pretend play area. They removed items they did not need (food stuff, baby beds, cooking utensils) and began stocking the shop with combs, brushes, and mirrors.

### Phase Two

*Developing the Project*

A web about barber and beauty shops was created, and the teachers noticed areas of interest and brought in related items. Sherice and Shirley supplied the shop with lotions, empty shampoo bottles, blow dryers and curling irons (with the cords removed), fake nails, and gemstone stickers for ear piercing or nail decoration. After experiencing the shop for a day, the teachers realized that rules needed to be written.

The children were ready to open the shop up to the public. The children wrote the name of the customer, date of the appointment, and service requested (style, wash, nails) in an appointment book. Children cut out and put up pictures from hair-styling magazines on the walls of their shop. The class decided to change the name of the shop to Fashions, Beauty, and Barber Shop because the boys said they went to a barber shop to get their hair cut not a beauty shop. La'tece created a sign that read, La'tece's Prices (HARWRSH 11.00, RAP 12.00). Faith made a sign that read, Nals by Faith. Literacy was supported throughout the project. Children were inspired to write about the shop in their journals. Class books written by children were compiled and placed in our classroom library.

A field site visit to the College of Hair Design was scheduled. Brayden's representational drawing of a massage table inspired the class to add massages and shaves to the list of services our shop provided. Children, teachers, and support staff came in regularly to schedule an appointment. The class would meet as a group and discuss how much money had been made at the end of the day.

### Phase Three

*Concluding the Project*

The project lost its momentum after week four. The appointments began to dwindle, and supply and demand was apparent when we ran out of hair tattoos. In a class meeting, the children voted to change the pretend play area into something other than a beauty/barber shop.



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| Comments | The Fashions, Beauty, and Barber Shop quickly became a project and brought the community of our classroom together in a way that it never had before. The topic came entirely from the children and provided a catalyst for meaningful learning across the curriculum. The project proved to be the most successful experience in building inter- and intra-personal skills among all children in our classroom.<br><br>If the project were done again, information about inventors/history would have been included. The first African American woman who invented the flat iron was never presented, but we had planned to discuss her. |
|---|---|

"Today I want to be the receptionist. I want to schedule appointments."
Lacey

Jessica requested a full set of fake nails. Darryon initially counted out a set of nine, but realized he needed one more.

# The Truck Project

**A Project by 3-, 4-, and 5-Year-Old Children**
**at Fairview Early Childhood Center, Rockford, Illinois**
**Length of Project: March to May 2002**
**Teacher: Jean Lang**

## Phase One

*Beginning the Project*

This project began when parents were invited into the classroom to share a job, hobby, or interest. One father brought several Nylint trucks from his place of employment. His presentation caused a great deal of attention, and we saw interest in trucks in the classroom. Several children painted trucks almost every day; block play included trucks consistently. We read several books about trucks. I wrote to parents about the children's interest and asked for materials or experts to help. Next, I created a teacher anticipatory web that included possible concepts, curriculum goals, and portfolio items. I also made a list of focusing activities, possible field sites or resource people, ideas for dramatic play or constructions, and possible culminating activities.

## Phase Two

*Developing the Project*

The children had many ideas and questions such as, "Who can drive the trucks?" "What does he do with the cement?" "How many people fit in the truck?" "How many wheels does it have?" "How does the dump truck's shovel move?" A grandparent brought her dump truck for children to sketch. Another family arranged for a cement truck to come and pour cement from which we made circular garden stones. We sketched and asked the experts our questions. We observed a sewer construction in the school neighborhood and sketched. We were able to visit the construction site on four different occasions. There was so much activity at the construction site that families, teachers, and children could hardly record all the information.

The children were fascinated by the trench box that held the soil back in order for the workers to safely build the cement water and sewer lines. They again had many questions, such as "Why is the trench box in the hole?" "Why do pipes go in the hole?" "What is the trench box made out of?" "How do you make the poles on the trench box stand up?" "When he puts the cap onto the trench box, will he hammer it together?"

## Phase Three

*Concluding the Project*

The children decided to build a dump truck in the classroom out of appliance boxes. We also built a model of a trench box, which the children buried in the sand box on the playground. A parent made a base for a cement truck out of dense foam blocks that had been donated through a recycling center. The children painted the models and added wheels. We culminated our project with a sharing night for families to view our documentation panels and constructions. This project was one of the longest and most successful projects that we have ever completed.



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| Comments | There were many positive aspects to this project. We were able to involve many of the families in our classroom as the catalyst for the start of the project and also as resource experts and support during field site visits. In addition, the community that surrounds our school environment was a major contributor to the development of this project. The Rockford Water and Sewer Department and even the Coca Cola delivery truck that serves our school became involved in our project work. It is important to remember that educators are much more effective when we tap the resources and knowledge of both our community and our families. I would like to share and extend the knowledge of project work to several families within our classroom so that they can support their children in project work outside our classroom. This experience will develop a lifelong skill of investigation and learning. |
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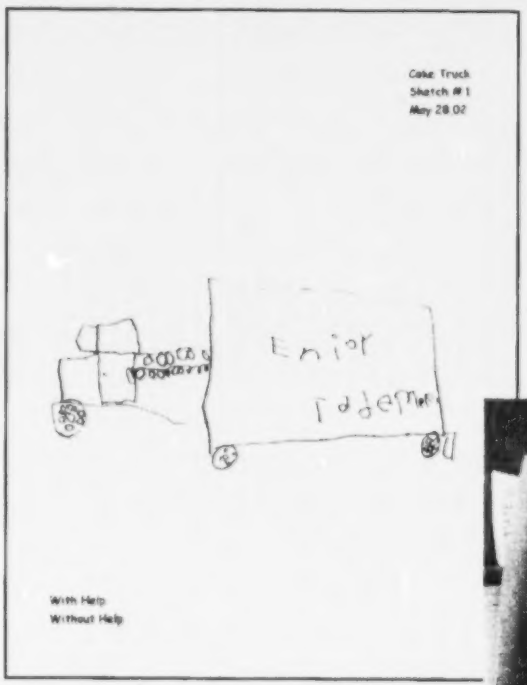

## What Happens at McDonald's?

A Project by 3- through 6-Year-Old Children
at Illinois State University Child Care Center, Normal, Illinois
Length of Project: September through November 2002
**Teachers: Pam Morbitzer, Lisa Lee, & Barb Gallick**

### Phase One

*Beginning the Project*

The children in our program pretended to play restaurant in the dramatic play area regularly. During morning meeting, the teachers and children began to discuss restaurants everyone had visited. Small groups of children interviewed the class and created graphs showing our favorite restaurants. Because there was a McDonald's on our campus, we took a walk to visit this restaurant. The children made some initial sketches of the restaurant. The children expressed interest in learning more about how the kitchen was run and what was behind the counter. They asked many questions about how the counter area machines operated.

### Phase Two

*Developing the Project*

After visiting the McDonald's on campus, the children formed groups that would investigate the following areas: (1) eating, (2) kitchen, (3) counter, (4) play, and (5) office/storage. Each group of children formulated questions related to their area of interest. The play area group visited a McDonald's in Bloomington. The other groups visited the campus McDonald's. At each McDonald's, one of the managers answered the children's questions and gave them a tour. During each field visit, the children sketched the areas they were investigating.

The children decided they wanted to create a McDonald's restaurant in the dramatic play area of our classroom. They sent a letter home requesting items to be used in the restaurant. Various small groups worked to create an ice cream machine, a drink machine, a juice machine, menus that would be posted on the wall, and food items made from hard-drying modeling clay. Many families contributed drink cups, sacks, Happy Meal toys, fry bags, and other paper products from visits to McDonald's. Once the machines were completed and other items collected, the children rearranged the dramatic play area. They spent some time discussing the layout of the kitchen, office, and eating and counter areas. Some children created labels for various bins and shelves that were used to store food and paper items in the restaurant.

### Phase Three

*Concluding the Project*

A group of children painted a sign for the dramatic play area McDonald's. Once this sign was hung and the restaurant opened for business, the children were able to apply, in their dramatic play, the knowledge gained during fieldwork. The children shared the project with their parents by giving them tours of the McDonald's as well as serving them "meals." The process of setting up the McDonald's involved the use of organizational skills, brainstorming, problem solving, and teamwork. The children gained an understanding of what is involved in the daily operation of a restaurant.



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| Comments | Because of the age and inexperience with project work of a majority of the children, the teachers found themselves taking more of a leadership role than in previous projects. The McDonald's restaurant project progressed at a slower pace than other projects, but the teachers felt that it was still a valuable experience for the children. The "behind the scenes" investigation expanded the children and teacher's knowledge base as well as provided opportunities for social interactions and language development. Restaurant operations served as a good topic for the children who were new to project work as well as an interesting topic for the children who had prior project experience. |
|---|---|

## The Worm Project

A Project by Pre-K and Kindergarten Children (multi-age and like-age groupings)
at Donald C. Parker Early Education Center, Machesney Park, Illinois
Length of Project: 8 weeks
**Teacher: Nancy Plate**

### Phase One

*Beginning the Project*

Each year, rainy spring days bring out worms, whose appearance peaks the curiosity of our students. In spring of 2002, I decided to cultivate that curiosity by starting a composting system using worms. A grant was written for the necessary materials. This project was open to all interested kindergarten students and at-risk and special education preschoolers. Children represented their previous knowledge on the subject by webbing, doing time-1 drawings, and drawing and writing their predictions about how 1,000 worms would be delivered to our school. Students helped construct the worm bin and readied it for the arrival of the worms.

### Phase Two

*Developing the Project*

All investigations for this project took place on site. Some questions included the following: Do all worms turn into butterflies? How do they move through the mud? How long do they live? Do they have very tiny hands?

The worm bin composting system offered a constant supply of worms to study in the classroom. Occasionally, the weather brought worms to the surface of the playground for study. The students used magnifying glasses and the overhead projector to study the worms and their movement up close. For expertise, nonfiction books and information located on the Internet were consulted. Students represented their learning through drawing, writing, movement, constructing with unifix cubes, and yarn. Measuring and counting were practiced as students learned about worm length and worm segments. One fact that seemed to fascinate the students was that worms have five hearts. They chose to represent this information in a variety of ways. During Phase 2, students did time-2 drawings and added information to their original web. Because many different groups of children were studying worms, the project's raw documentation was displayed across the wall of the learning center. This display facilitated groups learning about and questioning what other groups were doing. While the worm project was progressing in the learning center, some individual classrooms were studying caterpillars. Those students participated in making a Venn diagram comparing worms and caterpillars.

### Phase Three

*Concluding the Project*

Finished documentation of this project was displayed in the hallway for parents and teachers. A book written by the students explaining the worm bin building process is housed in the learning center. This book and pictures from the project have stimulated interest from current students in building a worm bin. During the project, measuring, counting, and writing were practiced. The children discovered ways to communicate what they had learned. The students had opportunities to observe and make comparisons. They participated in group discussions and cooperated within their groups. They learned to be respectful of living things.


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| Comments | What I found most meaningful about this project is how much the children learned from each other. I noticed once again that children are highly motivated to practice skills when they sense an immediate purpose for them, such as writing in a way that would ensure clear communication with others. The models for these skills were often other students. This project provided authentic opportunities for students to communicate and solve problems. They consistently rose to the occasion. As always with projects, I am impressed at the level of concentration young children exhibit when they are investigating a subject that interests them. |
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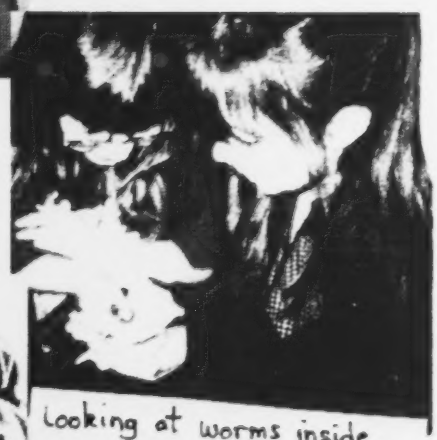

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## Second-Graders Study Their Community

A Project by 7- and 8-Year-Old Children
at Grafton Elementary School, Grafton, Illinois
Length of Project: October 25 to December 18, 2002
**Teacher: Dot Schuler**

### Phase One

*Beginning the Project*

Because our state standards and district curriculum goals include a study of the community, we always do a community project. Our project began when children created a web revealing their beginning knowledge; they also told personal stories. Each story was written, illustrated, and displayed; our web was placed on a bulletin board for reference. Daily journal entries stimulated discussions and questions. I documented the questions on a chart, noting that the children's interests would lead to investigations that would help us meet state standards of understanding historical events; geographical characteristics; and political, economic, and social systems of our local community.

### Phase Two

*Developing the Project*

Several small groups of children had questions about local buildings, businesses, and government offices, so I planned some walks. We walked to City Hall; and the secretary, chief of police, and a local historian spoke to the children. We also walked to the post office. On each of our walks, we stopped occasionally so the children could sketch places of interest. After each walk, we met as a group to document our notes collectively on charts to be used as resources. Three children investigated the local propane company; the owner (grandfather of a student) visited our classroom to tell about his business. Two children investigated our two rivers using the wall map to locate the source and mouth of each river and find the confluence of the rivers east of our town. One child investigated how the bluffs were formed; a local environmental educator answered her email message to help her with an understanding of the rock formations. Two children studied the new park; three students conducted interviews to see why people like Grafton; three students learned about "numbers" in our town, such as the number of people, houses, businesses, and so forth; another student learned about the founder of our town.

### Phase Three

*Concluding the Project*

Our table display of models was accompanied by written representations of new knowledge (charts, mobiles, books, maps, a time line, webs, a paper-roll movie, and a dichotomy). After our evening culmination, our models were proudly displayed at City Hall so businessmen and women could view the amazing likenesses created by the children. While the models were on display at City Hall, we walked to the building to hear three local people read books. The chief of police, an alderwoman, and a retired librarian each read a book to the children as a part of the Illinois governor's program *Illinois Reads in Special Places*.



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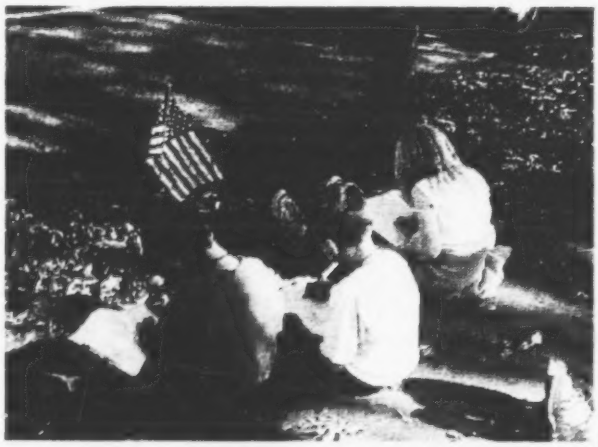
## Comments

While many state standards were met, another goal was accomplished—to create an interdisciplinary context of learning that complemented all areas of the curriculum, using language arts, mathematics, science, social studies, and fine arts to communicate new knowledge. Moreover, as positive dispositions for learning were nurtured, the project, I hope, stimulated students to continue learning the rest of their lives. Studying our community always provides unforeseen surprises in that different community members offer their contributions according to the children's interests. These varying contributions help shape projects that feature their own uniqueness each year, even though the community topic remains the same.



*Children sat on the sidewalk and sketched City Hall across the street.*

*Compare a student's sketch to the actual building.*

*Four boys anxiously await gluing the pieces of the roof together.*

*The finished model was on the table display, while the web of information was suspended from the ceiling above the model.*

## The Construction Project

A Project by 3-, 4-, and 5-Year-Old Children
at Discovery Preschool, Peoria, Illinois
Length of Project: 2 months
**Teachers: Pam Scranton, Lora Taylor, & Terra Shelton**

### Phase One

*Beginning the Project*

When school started in early September, there was major construction happening on the road in front of our classroom. Each day, the children would come in full of comments about what they had seen outside. Questions came fast and furious: "How does that dump truck work? How come those big shovels go up and down? Where are the wheels for that tractor?" Very quickly, we realized that we couldn't ignore the children's interest, even though it was only the second week of school, and we began listing their questions, webbing their ideas about what they wanted to learn, and exploring options for experts and field sites.

### Phase Two

*Developing the Project*

One of our families had a grandpa who was the road commissioner of a small town and arranged for the children to visit. "Papa Pete" became our expert for their investigations of construction. He encouraged the children to climb all over the different tractors and explore them, sketch them, and graph them; they even got to drive them! They came back from the field site with lots of information about construction machines. With the construction going on right outside our classroom, we also had a site that we could continuously visit for new information. Once back in the classroom, a small group of children began constructing a large dump truck and backhoe loader. During the construction of the tractors, another small group was involved in re-drawing, using their field sketches as a reference; these same drawers later began mural work, again using their time-2 sketches and blowing them up using an overhead projector. As the tractor group was finishing their construction, they began labeling the parts of their tractors and solving the problem of how to get the arms of the backhoe to move up and down.

### Phase Three

*Concluding the Project*

The children decided they wanted to invite their families to school to see all their project work, so they wrote an invitation; arranged their constructions, paintings, drawings, and stories; and held the Construction Project Night. Our expert, "Papa Pete," also came to project night, and the children delighted in telling him and showing him all they had learned during the construction project!

| Comments | We were in no way ready to begin a project the second week of school, but we just couldn't ignore the children's interest and their excitement. The availability of our constant field site for revisiting and our wonderful expert made this project a success. |
|---|---|

## The Clubhouse

A Project by 4-Year-Old Children
at Preschool for the Arts, Madison, Wisconsin
Length of Project: All Year
**Teachers: Nicole Smith & Elizabeth Raymond**

### Phase One

*Beginning the Project*

The Copper Room Class started as an intimate group of only eight 4-year-old children, all of whom were new to the school, in a very large classroom. The children were very interested in exploring the school and became very excited about the lofts and structures that many of the rooms had. They wanted room to have a cozy, special place; they wanted to build a clubhouse. The children built small- and large-block clubhouses, but they were not satisfied. They were very determined that they wanted to build a "real" clubhouse with nails and wood. Although their interest began during the first week of school, the project the children started would last the whole year and grow as the class size grew to 18 children.

### Phase Two

*Developing the Project*

The clubhouse became a frequent topic of conversation, play, and drawings for the rest of the year. The children decided that it would have a pitched roof with pinecones, be big enough for them to all fit inside, and have openings for light to come in. While working on plans and drawings, the children started practicing running a bakery to do a real one as a fundraiser. Bakery Eat It was a big success, so we started looking for an expert to help us figure out what we should buy and to help us build. We spent a lot of time measuring and decided to make a cardboard clubhouse to test out the size. It was not big enough for our growing class, but we enjoyed the cardboard version for two months while we explored using tools. We built several individual and group wood projects, including a small model of the clubhouse, to get lots of practice. Finally, we were ready! The building committee began meeting with our volunteer carpenter to finalize plans and make a list of needed materials. Several small groups went to lumberyards and hardware stores to buy different needed materials. Two at a time, children helped with all aspects of the construction. We soon had an 8-by-10-foot clubhouse in our room!

### Phase Three

*Concluding the Project*

When construction was over, we were not finished. The children painted and decorated the clubhouse. They finally got to move furniture in and play in it (although at several points in the building process, we did halt for a few days to let them play and explore in it). They were so proud of their work that they wanted everyone to see it and play in it. They planned a Clubhouse Warming Party and invited parents, administrators, and anyone who had helped them along the way. They used their new baking skills to make refreshments, which they served out of the "drive-up windows" that they had designed.



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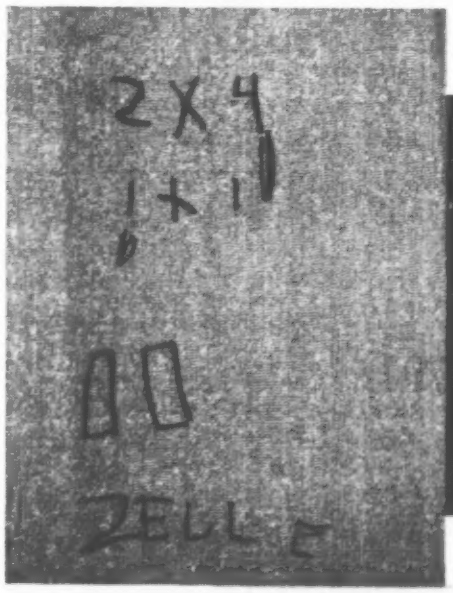
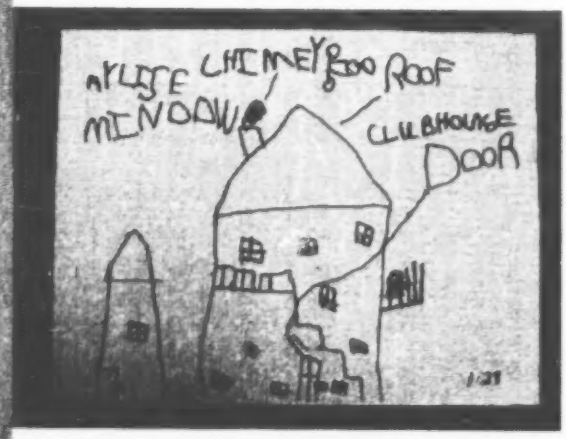
| Comments | This project not only impressed the children, but very much impressed the teachers. I was amazed at the determination of the children in seeing that their vision became a reality. The children were able to figure out that they needed an enclosed space to help overcome the vastness of the classroom. Their planning process was filled with constant compromises and pushed their representational drawing skills, understanding of numbers and measuring, emergent writing (the children made many letters and signs to make this project happen), comfort working with other adults (they made several of the planning phone calls themselves) far beyond what we would have imagined possible. Underlying all of the project, though, the predominant learning was social in nature. They needed a space to feel comfortable in and to be with a small number of children, and as each new child arrived, the group welcomed them by pulling them into the project. They became not only a class, but a true team. |
|---|---|



## Memorials and Sculptures

A Project by 5- through 7-Year-Old Children
at Valeska Hinton Early Childhood Education Center, Peoria, Illinois
Length of Project: 5 months
**Teachers: Jean O'Mara-Thieman, Heather Goocher, & Kendrya' Johnson**

### Phase One

*Beginning the Project*

The students selected the topic of memorials after they read about Dr. Martin Luther King, Jr., and his future memorial in Washington, DC. They initiated the project in the block area by constructing their concepts of Dr. King's future memorial, as well as constructing other memorials from the Washington, DC area. I added the study of sculptures as a means of expanding their knowledge, as a means of providing a comparison, and as a means of developing their creativity and ability to investigate. As we looked to our community for information and resources, the class wanted to know: What is a memorial? What is a sculpture? Is the White House a memorial? Do we have memorials and sculptures in Peoria? These questions developed as the boys and girls worked in the block area and during discussions.

### Phase Two

*Developing the Project*

We began to explore memorials and sculptures within our community. We started with our school as we investigated how it got its name and how the entry bench got there. Our investigation expanded to neighborhood sculptures and memorials on Jean Baptiste du Sable, Ira Nelson, and Romeo B. Garrett. As we walked to each of these sites, the students took their clipboards and sketched the different memorials and sculptures, noting the shapes and materials used. On the computer, the boys and girls observed other memorials in the Peoria area.

The class took a walking tour of the city, guided by a member of the Peoria Historical Society. Another member of the Historical Society came to the classroom to show slides and answer questions. Before we created our own sculptures, we visited the Peoria Art Guild, and we had a Bradley student sculptor bring samples of sculptures and work with us on the uses of clay. On another site experience, the class visited Springfield to see Lincoln's home and his memorial.

Students represented their learning in a variety of ways. They created and wrote about their own sculptures, developed a class newspaper about local memorials and sculptures, and wrote a book about local memorials and sculptures. The construction area was utilized throughout the project for block building of memorials and for creating a neighborhood map of memorials and sculptures.

### Phase Three

*Concluding the Project*

To culminate our study, the boys and girls displayed their sculptures and writings throughout the building. They placed their neighborhood map with its memorials and sculptures in the hall along with their memorial and sculpture book. Newspapers were available for all to read as part of the display. The students invited their families and friends to stop by and see their project work. The children acted as resources for all who came.

| Comments | It is so powerful to see a project initiated by the children. There is no building of the interest: it is there! In this project, the children constructed much of their own learning and developed many of their own goals and areas of investigation. It certainly allowed them to be successful learners. Initially, I had been concerned that the investigation was too abstract for the boys and girls, but the use of the book *Wilfrid Gordon McDonald Partridge*, by Mem Fox, and the accessibility of materials alleviated that problem. This was an excellent topic. Because we are in the city, we were in an excellent position to take walking site visits to numerous memorials and sculptures, many located in or by our city buildings. The project helped all of us develop an interest in and appreciation of our community. Further, it helped the children develop a beginning understanding of time and the effects of the past on all of our lives. One child, LeBrandon, stands out in this project because he so loved history that he was able to motivate the entire class to delve into this topic. |
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## The Salt Truck Project

A Project by 4-Year-Old Children in a Dual-Language Head Start Classroom
at West Liberty Community Schools, West Liberty, Iowa
Length of Project: Late January–March
**Teachers: Rebecca A. Wilson, Sylvia Frausto, & Jen Buysse**

### Phase One

*Beginning the Project*

Our window faces a street, and I had noticed children were interested in watching vehicles. When the school bus or garbage truck passed, they were very excited. I provided several focusing experiences to better determine children's interest, including examining my car, the school bus, a teacher's bicycle, and a grain semi truck. After the visits, we made a web with the children about all of the vehicles they had seen. Interest was highest following the semi truck visit. I brought in nonfiction books about trucks, and the children named the different trucks and their purposes. I recorded the children's questions. The children were interested in how to drive a truck, the windshield wiper fluid, oil, and gasoline.

### Phase Two

*Developing the Project*

One day while we were writing in our journals, Misael drew a truck and told me it was the kind that "puts salt on the road." This comment prompted a big discussion among the children about why the salt goes on roads and how the truck puts it there. We had a hard time finding photographs of salt trucks in the literature and discovered that the salt truck is the same thing as a snowplow. I contacted our city service garage and arranged a visit from our city snowplow driver for the following week.

City workers brought over a backhoe loader, sometimes used to move snow in parking lots. The city workers were very helpful and first came into our classroom to answer the children's questions. Their questions had narrowed from trucks, in general, to how the salt gets on the road and how the snow gets moved. The city workers demonstrated how snow is moved, both with the snowplow and the backhoe loader. They also showed where the gas tank, oil stick, and windshield wiper fluid reservoir are on the equipment. After watching the demonstrations, the children sketched the snowplow and backhoe loader. They also represented their learning through painting. Later, they created a play structure of the snowplow.

### Phase Three

*Concluding the Project*

After completion of the snowplow, documentation of the children's learning was shared. The children made a list of whom they wanted to invite to see their project. The students created their own invitations, and we ended up having a snowplow "open house" to share their learning with parents, other children in the school, and the community.

| Comments | Among the many things that I learned from this project was how meaningful and life changing projects can be for children. Many new experiences like finger painting or taking off his shoes frighten Misael, and he cries. When our associate teacher's husband brought his semi truck to school, Misael was terrified and cried. I carried him out to see the truck, and he buried his head. But when Mr. Buysse started talking about his semi, Misael lifted his head and was fascinated! By the time our class got halfway around the semi, Misael was down on the ground listening intently with the other children. Back in our classroom, in the block center, Misael re-created his experience, even showing where the grain fell out of the bottom of the truck. Since that day, Misael has been investigating trucks and is opening up to new experiences and sharing with other children. He was instrumental in the children's interest in "salt trucks!" Misael has become a leader in our classroom, sharing ideas with other children about how to create the snowplow. The project has transformed Misael's role in our class and helped him to communicate verbally with his peers. |
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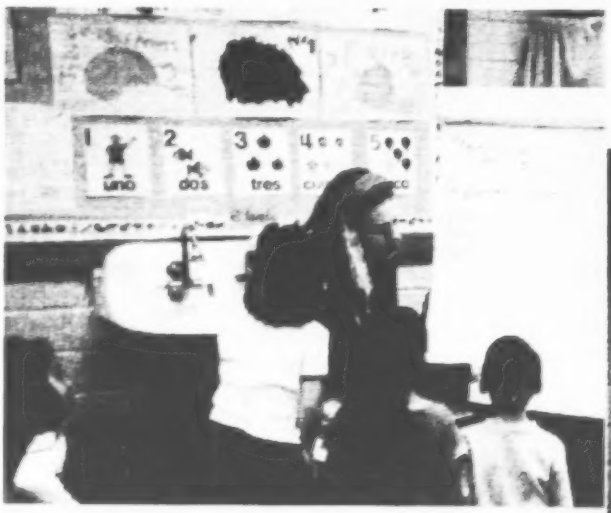


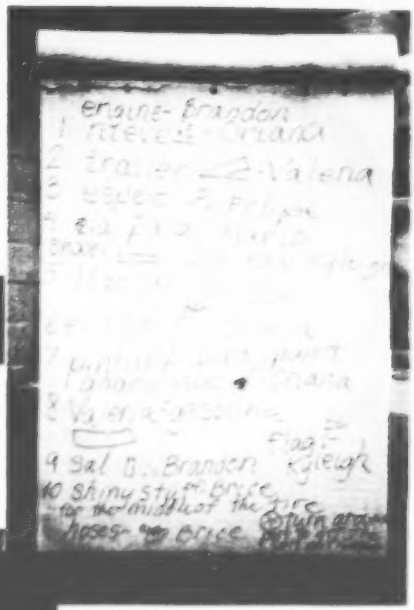

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## The Greenhouse Project

A Project by 3- through 5-Year-Old Children
at Illinois Valley Community College Early Childhood Education Center, Oglesby, Illinois
Length of Project: 13 weeks in the spring and 3 weeks of revisiting in the summer
**Teachers: Marilyn Worsley, Kathie Zecca, & Mary Ann Vollmer**

### Phase One

*Beginning the Project*

When the teachers learned that a greenhouse was to be built next to the playground, they thought that greenhouses might be a project topic. During the months before, the children had shown an interest in growing and caring for plants. We also realized that there could be daily opportunities for hands-on learning directly from the experts and their materials. We didn't know when the construction was to begin, so we were happily surprised when we discovered tall metal posts sticking in the ground. When trucks carrying boxes and equipment arrived, the children were curious and ready to investigate. They asked for clipboards and began formulating questions and theories about the events. A group eagerly approached one of the workers to find out what they were building.

### Phase Two

*Developing the Project*

While the construction workers were at the site, the children took advantage of their close proximity to question them often about their work and equipment. After the children were allowed to sit in the all-terrain forklift, the teachers thought the children would want to build their own. Instead, they began making their own greenhouse, using the real one as a reference. We visited a fully functioning greenhouse to further their understanding. Several parents helped guide the children through the enormous greenhouse, documenting the children's representations. After the trip, the children's interest shifted more to growing and caring of plants. The children created murals, clay tools, and paper plants to supply their greenhouse. Toward the end of the project, another shift in the investigation took place as the children began noticing the classroom plants dying. We arranged to visit the horticulture instructor to find the answers to the children's many questions concerning our plants' deaths. Some of the children then decided to make a book about the life cycle of plants. They dictated each page, starting with the buying of the seeds and ending with the plant going back into the ground to become fertilizer for a new plant.

### Phase Three

*Concluding the Project*

The children decided to share their knowledge and experiences with their parents and the college community by displaying the greenhouse and the book in the lobby of the "big school." A list was created of the exact items they wanted to display, including signs that labeled the greenhouse and some of its contents. The main greenhouse group set it up, and the children shared their experiences with the different community members.



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| Comments | This project turned out to be so wonderful for all, just as we had hoped. The children's vocabulary expanded (such as "polycarbonate sheets") during the investigation of the various jobs and materials. The children gained so much by this experience that we revisited the project for a few weeks during the summer when the workers returned to finish the inside work. This topic provided many social studies experiences for the children that are sometimes difficult for teachers to provide. |
|---|---|

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**Midwest Association for the Education of Young Children**
**Annual Conference, April 11, 2003**


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# Early Childhood and Parenting (ECAP) Collaborative at the University of Illinois

The Early Childhood and Parenting (ECAP) Collaborative at the University of Illinois is home to more than a dozen projects focused on the education, care, and parenting of young children.

Located at the Children's Research Center in a setting conducive to interdisciplinary research, teaching, and public service, these projects share their expertise and experience, a library, and common meeting spaces. Several projects share key personnel. The structure provided by ECAP enables us to articulate, clarify, and enhance the cooperative relationships that exist among these projects, and to strengthen their national visibility.

Established in 2003, ECAP has a broad vision for its future. The projects under its umbrella are committed to ensuring that the Collaborative:

- Builds a national reputation for high-quality research, teaching, and service to young children and families
- Influences state and national policy through relevant research
- Provides a context for interdisciplinary training of students, direct service providers, technical assistance providers, and others whose work relates to young children and their families
- Actively fosters the links between research and practice

With this vision in mind, projects associated with ECAP are actively seeking funding to establish an endowment for operating the Collaborative. Outside funding will enable ECAP to produce a biannual publication that highlights the research and other activities conducted at the Collaborative, attract students, share support personnel, compete for additional grants and contracts, strengthen the Collaborative's influence on policy and practice in Illinois and nationally, and in other ways build the national visibility and strengthen the influence of the Early Childhood and Parenting Collaborative and the University of Illinois.

Current ECAP projects are listed below:

- **Center on the Social and Emotional Foundations for Early Learning**
  Web Site: http://csefel.uiuc.edu
- **Connecting with Parents in the Early Years**
  Web Site: http://npin.org/connecting/index.html
- **Culturally and Linguistically Appropriate Services Early Childhood Research Institute**
  Web Site: http://clas.uiuc.edu
- **ERIC Clearinghouse on Elementary and Early Childhood Education**
  Web Site: http://ericeece.org
- **Great Lakes Quality Improvement Center for Disabilities**
  Web Site: http://qicd.uiuc.edu/
- **Illinois Early Learning Project**
  Web Site: http://illinoisearlylearning.org
- **Mothers' Perceptions of Interactions with Babies with and without Disabilities in Different Cultures**
- **National Parent Information Network**
  Web Site: http://npin.org

- **NPIN Illinois**
  Web Site: http://npinil.crc.uiuc.edu/

- **Replicability of a Parent-Child Model of Early Intervention across Participants and Settings (Outreach Project)**
  Web Site: http://www.ed.uiuc.edu/sped/piwi/

- **SPARK: Skills Promoted through Arts, Reading, and Knowledge (Directed Research Project)**
  Web Site: http://www.ed.uiuc.edu/sped/spark/

- **University Primary School**
  Web Site: http://www.ed.uiuc.edu/ups/

**Other Web Site Projects Hosted by the Collaborative**

- **Center for Evidence-Based Practice: Young Children with Challenging Behaviors**
  Web Site: http://www.challengingbehavior.org

- ***Early Childhood Research & Practice***
  Web Site: http://ecrp.uiuc.edu/

- **Early Education Clearinghouse Facts in Action Web Site**
  Web Site: http://factsinaction.org/

- **National Association of Early Childhood Specialists in State Departments of Education**
  Web Site: http://ericps.crc.uiuc.edu/naecs/

- **National Child Care Information Center**
  Web Site: http://nccic.org

- **National Coalition of Campus Children's Centers**
  Web Site: http://www.campuschildren.org

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